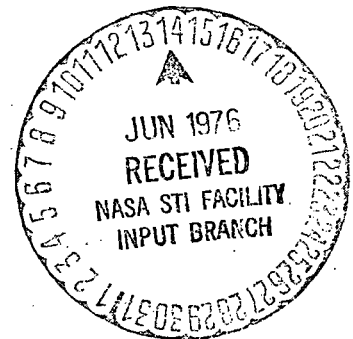


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Date: April 30, 1976

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DATE 4/30/76	THE SINGER COMPANY SIMULATION PRODUCTS DIVISION	PAGE NO. i
REV. ORIGINAL	BINGHAMTON, NEW YORK	REP. NO.

FOREWORD

The Design Review Summary Report is prepared in sections, with each section representing a system or equipment development activity. The information contained in this document is required 10 days after the respective CDR's and PDR's. Since CDR's and PDR's are scheduled on an incremental basis, the Design Review Summary Report sections are prepared incrementally with the scheduled dates for associated CDR's and PDR's.

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Design Review Summary Reports
DRL Item 4, DRD CM-024TC

1. General

The Design Review Summary Report for the Shuttle Mission Simulator (SMS) are contained in separate sections of this document. These sections are generated individually for use during the design reviews held for the applicable systems of the SMS.

The sections of the SMS Design Review Summary Report are listed below:

- Section 1 - Electrical Power System (EPS)
- Section 2 - Mechanical Power System (MPS)
- Section 3 - Main Prop and Ext. Tank
- Section 4 - Solid Rocket Booster
- Section 5 - Reaction Control System
- Section 6 - Orbital Maneuvering System
- Section 7 - Guidance, Navigation & Control
- Section 8 - Comm and Tracking Insts.
- Section 9 - Env. Cont. & Life Support
- Section 10- Data Processing System
- Section 11- Mechanical System
- Section 12- Payload Accommodation (Not Required)
- Section 13- Vehicle Dynamic System
- Section 14- Mission Control Center Interface
- Section 15- Image Generation System
- Section 16- Image Display System

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Section 17 - Image Processing & Control

Section 18 - Software Stds & Support Software

Section 19 - Utility Software

Section 20 - Crew Stations

Section 21 - Motion Base (Not Required)

Section 22 - Instructor Operator Stns

Section 23 - Digital Computer Complex

Section 24 - Signal Conv. & Ancillary

DATE 4/30/76

THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

PAGE NO. 1 of 2

REV. ORIGINAL

BINGHAMTON, NEW YORK

REP. NO.

SMS-DRSR

Identifying
Incremental Section
Release Sheet

This release of the Design Review Summary Report contains
Sections 20, 22, and 24. NASA W.P. #'s 20, 22, and 24.

This is a partial release for WP #24, other increments will
follow.

DATE 4/30/76	THE SINGER COMPANY SIMULATION PRODUCTS DIVISION	PAGE NO.2 of 2
REV. ORIGINAL	BINGHAMTON, NEW YORK	REP. NO.

DRL #4
DRD #CM-024TC

Section 20

Section 22

Section 24

1. General

These PDR's were held 4/20 and 4/21/76. This release contains all Program Directives written during the PDR's, as well as minutes, and handouts. Engineering documentation updates will be submitted under another letter.

2. Attendees

Personnel in attendance at the various PDR's are listed on page 1 of the respective PDR minutes. One set of signed-off minutes are enclosed for each PDR.

3. Program Directives

All Program Directives were dispositioned the day after PDR, and are included in this DRSR as completed directives.

4. Action Items

If an action item was assigned, it is listed in the respective set of PDR minutes.

POWER SYSTEM
PRELIMINARY DESIGN
REVIEW MINUTES

APPROVAL: Tom Gerek
TOM GEREK
SECTION CHIEF

APPROVAL: Bert Gifford
BERT GIFFORD
TEAM LEADER

Power PDR

Attendees:

Bruce Stach, P.T.
Charles Olasky, P.T.
Robert Meyers, P.T.
Cliff Mire
Bert Gifford
K. Hickling, P.T.
P. Valochovic, P.T.

Glenn Hiser
Tom Gerek
Abe Ulangca
Fred Carver
B. Steckert, P.T.
G. Chiesa, P.T.

P.T. - Part Time

Discussion:

Tom Gerek presented an overview of the SMS powersystem and turned the meeting over to Fred Carver for detail presentation.

A revised EDR figure 4.6.1.2, overheat warning, was handed out (see Attachment 1) as well as an overall bus configuration (see Attachment 2).

Discussions began on EDR figure 4.1.1. A question was asked concerning the CB rating. SPD answered that the current rating was based on information listed in the Data Book.

NASA asked whether the FBCS/MBCS power was separate as required by the SOW. SPD responded that the power control was separate even though it is a common power cabinet. Emergency OFF will shut down both complexes, however.

NASA asked if Emergency OFF will drop air conditioners and MBCS lift platform. (Ref: EDR figure 4.1.2). SPD answered these were not affected by Emergency OFF.

NASA asked if the NSS capability was included in this PDR package. SPD answered not at this time; when the design concept becomes firm, the documentation will be updated. Present plans appear to require another bus system which may require a larger cabinet.

SPD presented the power sequencing (Ref: EDR figure 4.2.1):

1. Normal/Disable - Must be in Normal
2. Manual - Must be held for 5-7 seconds
3. System ON - Allows power to power cabinet logic
4. Contactor
Switches - Apply power to individual pieces of equipment.

SPD presented the grounding philosophy (Ref: EDR figure 4.4.1)
SPD questioned the facility ground, i.e., should the neutral and chassis/signal grounds be separated in the PDU. NASA stated that

Building 5 has separate earth grounds, but this earth ground may not be tied back to transformer ground. This may cause a ground potential difference between neutral and chassis/signal ground if they are not tied together in the PDU.

Action: SPD 1 - Measure the ground potential of the earth/neutral grounds.

Discussion ensued on grounding of cabinets. The X-T recorder was discussed. NASA requested that the chassis ground be returned to the power cabinet in the power cable.

Action: NASA 1 - Inform SPD as to whether the 400 Hz power is ground isolated or not.

SPD presented the Emergency OFF System (Ref: EDR figure 4.5.1). Discussion ensued on the Emergency OFF availability/motion disable availability in the Crew Station. NASA generated Program Directive N24-001P. Computers and SID will be dumped when Emergency OFF is activated. Emergency OFF switches are unlighted.

EDR figure 4.6.1.2 (Overheat Detection System) was discussed. SPD stated that there are overheat detectors located in areas where DC power supplies are housed. Lights on cabinets & OS will illuminate and trigger aural alarm when overheat condition exists or test switch on OS is depressed. The DU airflow sensors are also connected to the Overheat Warning System.

EDR figure 4.6.1.1, Overheat Detection Circuitry, was shown and discussed.

Visual power and grounding system is separate and will be discussed during the Visual System PDR.

Discussion of the CEI was held to make the CEI's to be 1 Book with various sections for each end item. All the boilerplate items would be included only once and each section would address the unique items for each work package.

The following comments were discussed concerning the boilerplate areas:

a. Paragraph 2.0, Applicable Documents

Singer will take action item to clarify the wording so there will be no conflict with the SOW Addendum A.

b. Paragraph 3.3.3

Remove the comment concerning the power connectors and add to the power unique section.

c. Paragraph 3.3.3

Add the sentence, "Commercial.....process" from SMS Addendum A, Paragraph 3.4.3.1.

d. Paragraph 3.3.3.1

Remove the last sentence.

e. Paragraph 3.3.7

Change MIL-D-1000 to MIL-STD-100.

f. Paragraph 3.3.9

Singer will take an action item to decide what specification it will abide by and present to NASA for approval.

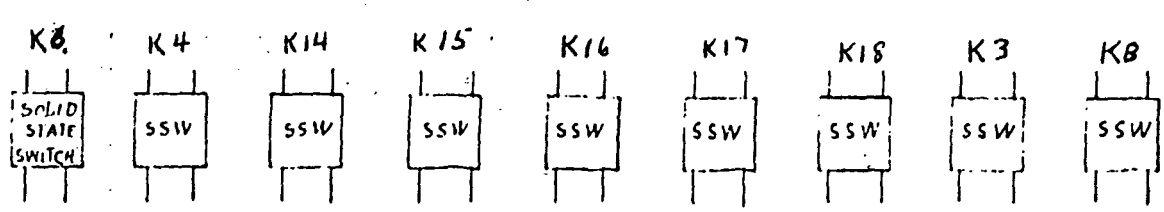
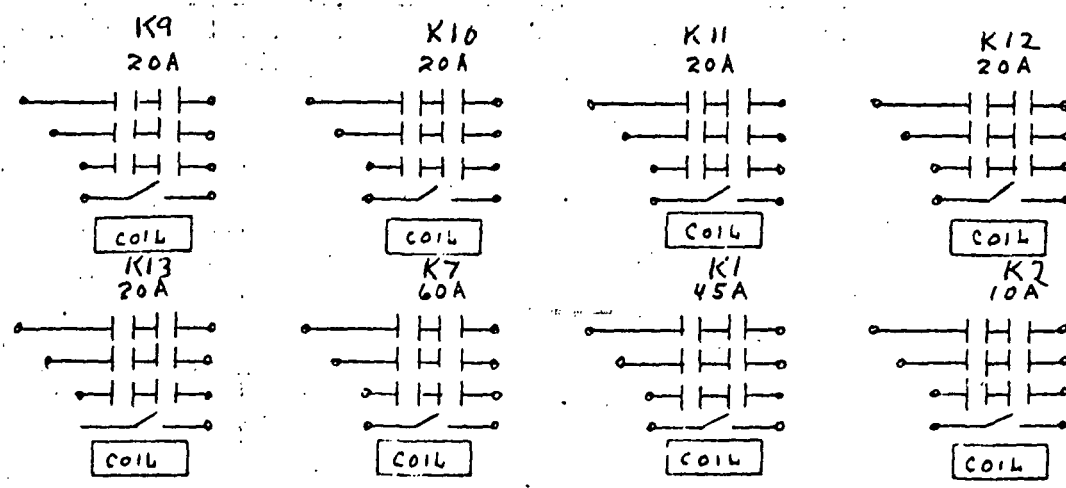
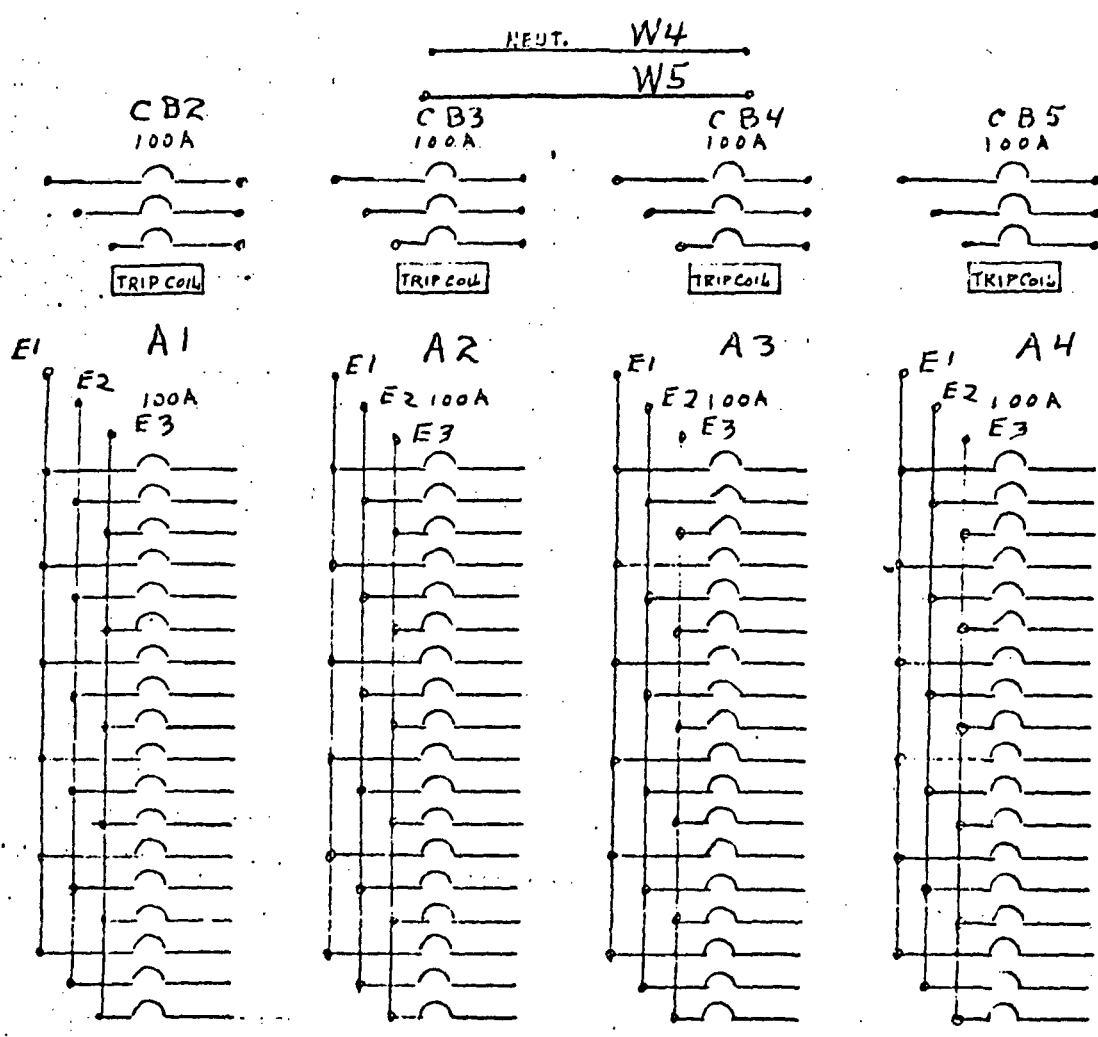
Action: SPD 2 - Inform NASA of EMI specifications used for SMS design.

Action: NASA 2 - Define whether a similar CEI documentation concept can be applied to the CPCEI's.

Singer will change Paragraph 4.1.1.2 of CEI to read: "Using visual inspection and voltmeter, verify that the correct power is supplied to various hardware items to ensure proper distribution prior to connecting the cables."

The Data Book was discussed without any comments.

NASA wrote RID's N24-001P, N24-002), N24-003), included at Attachments 3. 4 and 5, respectively.



SMS PROGRAM DIRECTIVE

1. INITIATOR	ORGANIZATION	DATE	NO.
B. M. Gifford	NASA	4/20/76	N24-001P
TITLE Crew Station Power Interlocks			
2. DESCRIPTION OF PROBLEM:			
Current design has the only Emergency C/S controls on the OBS console (total emergency power off only). This could result in FB shutdown due to a desire for quick motion turnoff. No emergency shutdown exists if OBS is not installed.			
3. RECOMMENDATION:			
Install permanent emergency shutdown switches in each crew station. Install an emergency hydraulic shutdown switch in MBCS.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED:			
Potential operating procedure problem. Intent to quickly shut off MB hydraulic system would also shut down Fixed Base.			
5. CONCURRENCE			
WBS MANAGER <i>Bm Gifford</i>		TEAM LEADER <i>Bm Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input checked="" type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS: <i>McClafferty</i>			
APPROVAL			
TECHNICAL MANAGER <i>L. Blacky</i>		DATE <i>4/21/76</i>	
7. CONTRACTOR'S IMPACT STATEMENT:			
Cost impact probably over \$2,000. No schedule impact.			
<i>LE Hall 4/21/76</i> <i>LeBrow 4/21/76</i>			
8. SCP ACTION:			
<i>Dis</i>			
APPROVAL			
SCP CHAIRMAN <i>McClafferty</i>		DATE <i>4/22/76</i>	

SMS PROGRAM DIRECTIVE

1. INITIATOR	ORGANIZATION	DATE	NO.
B. M. Gifford	NASA	4/20/76	N24-002P
TITLE Air Conditioning Emergency Off			
2. DESCRIPTION OF PROBLEM:			
Design does not include crew station air conditioning or Motion Base lift platform in Emergency Off System.			
3. RECOMMENDATION:			
Add Emergency Off contactors to air conditioning and platform lift power circuits.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED:			
Air conditioning could blow smoke, fumes, etc., even after Emergency Off is initiated. Emergency situation could involve lift platform and continue after Emergency Power Off is initiated.			
5. CONCURRENCE			
WBS MANAGER B M Gifford		TEAM LEADER B M Gifford	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER I. Clardy		DATE 4/21/76	
7. CONTRACTOR'S IMPACT STATEMENT:			
Cost impact under \$2000. No schedule impact.			
E. H. [Signature] 4/21/76 L. Brown 4/21/76			
8. SCP ACTION:			
APPROVAL			
SCP CHAIRMAN		DATE	

SMS PROGRAM DIRECTIVE

1. INITIATOR B. M. Gifford	ORGANIZATION NASA	DATE 4/20/76	NO. N24-003P
TITLE PDV Trippable Breaker Load Assignments			
2. DESCRIPTION OF PROBLEM: Motion Base and Fixed Base loads are distributed among the four trippable breakers.			
3. RECOMMENDATION: Redistribute power loads such that where possible, Fixed Base and Motion Base units are powered through separate 100A trippable breakers.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: Tripping of a single 100A trippable breaker will disable both the Motion Base and Fixed Base simulations.			
5. CONCURRENCE			
WBS MANAGER <i>B M Gifford</i>		TEAM LEADER <i>B M Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>L. Macky</i>			DATE 4/21/76
7. CONTRACTOR'S IMPACT STATEMENT: No cost or schedule impact. <i>W. Brown</i> 4/21/76			
8. SCP ACTION:			
APPROVAL			
SCP CHAIRMAN			DATE

INSTRUCTOR/OPERATOR
STATIONS

PRELIMINARY DESIGN
REVIEW MINUTES

APPROVAL: Tom Gerek
TOM GEREK
SECTION CHIEF

APPROVAL: Bert Gifford
BERT GIFFORD
TEAM LEADER

IS/OS PDR

Attendees

R. Follert	T. Gerek
D. Bailey	A. Ulangca
C. Mortimer	B. Gifford
L. Hershey	R. Myers
C. Olasky	R. Farley
B. Stach	

Tom Gerek began the presentation by stating the scope of the PDR. He then introduced R. Follert who presented the IS/OS console frame design.

Cliff Mire asked that SPD review the shelf framing to insure there are no sharp protrusions.

A revised IS panel layout and function list was presented (Attachment 1 and 1A). The revision was due to the fact that the TAC CRT's could not be mounted in 2 bays as originally anticipated.

NASA wrote RID N22-001P (Attachment 2).

SPD presented the OBS design approach and transmitted RID S22-001P (Attachment 3).

SPD presented the MBCS console for the OBS (same as OAS except for modifications to accept new CRT).

SPD stated, in response to NASA questions, that the FBCS OBS will block the payload station and portions of the aft center panels in the FBCS. NASA wrote RID N22-02P (Attachment 4).

SPD presented the FBCS & MBCS IS panel layout.

SPD stated that the visual select switch is not shown on the panel layout. This switch will be mounted on the same panel as the visual monitor.

NASA questioned the requirement for a freeze repeater on panel 3C when the control is located adjointly on panel 4C. SPD responded that this was OAS design.

NASA questioned the visual system status on panel 4C - it does not reflect the DIG system.

Action: SPD-1 - Define the visual system status.

Discussion ensued on the major equipment status on the OS. NASA questioned the "power on" light and requested SPD to evaluate the effectiveness of this light.

NASA wrote RID N22-007P (Attachment 5).

Discussion on the ISA panel was differed until discussion on the light pen approach.

NASA wrote RID on N22-003P, N22-004P, N22-005P - (Attachments 6, 7, & 8).

SPD presented the Graphic Display system configuration.

NASA questioned the EDR data that depicted the hardcopy capability as coming only from "system B". SPD stated that the system B hardware preforms the hardcopy but via software control from system A & C.

SPD presented an alternate hardcopy technique which deletes the video tape recorder. RID S22-002P was generated (Attachment 9 & 9A).

Discussion was held on the Aydin Alphanumeric CRT system.

SPD stated that each A/N CRT does meet the HEW requirements. NASA asked if collectively do they meet the HEW requirement to which SPD stated this information was not available.

Action: SPD-2 - Provide NASA with the data for the
Alphanumeric CRT radiation information
that Aydin has on file.

C. Mortimer discussed an option for use of the shadow mask Conrac CRT in lieu of the proposed Aydin CRT.

NASA wrote RID N22-009P (Attachment 10).

SPD presented options to add an expanded keyboard (45 additional keys) and light pen (Attachment 11). If these options are purchased by NASA they would remove the ISA Switch and CRT selection switchlight matrix.

SPD wrote RID's S22-003P, S22-004P (Attachments 12 & 13).

SPD stated that the SMS color scheme will be the same as the present OAS scheme. NASA had no comments. NASA noted that there were no provisions for the SMS IOS back-up communications loop. NASA wrote RID N22-008P (Attachment 14).

At this time R. Meyers requested the addition of an Abort, Master Alarm and Record in progress status light at the Instructor Stations.

NASA wrote RID N22-006P (Attachment 15).

The CEI specification was reviewed with the following comments:

- a) Para. 3.1.1.1 SPD to provide more detail on panels.
- b) Para. 3.1.1.2 SPD to provide better definition of CRT system requirements.
- c) Para. 3.1.1.2.3 Change the "right hand crew member" to left hand crew member".
- d) Para. 3.1.1.4 Change "(3) for FBCSS" to "(6) for FBCSS".
- e) Para. 3.2.1 Add SCE and computers to the interface requirements.
- f) Update figures to the ones presented at PDR.

ATTACHMENT 1

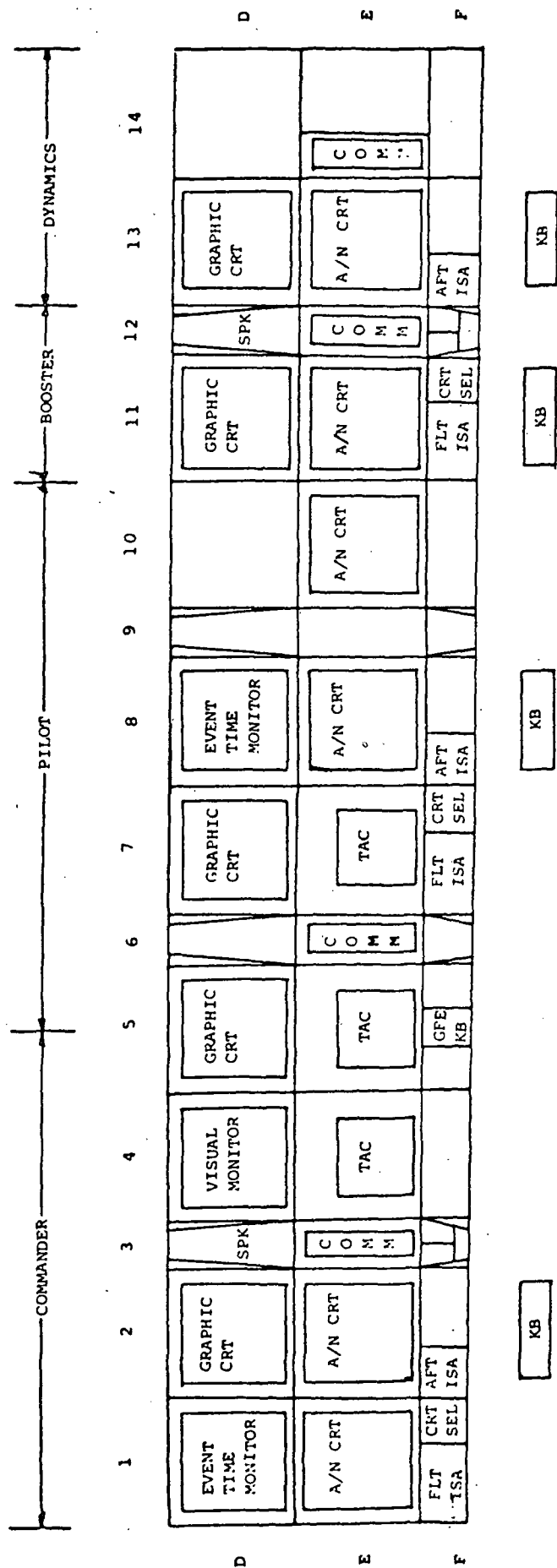


FIGURE 3.1-3 PANORAMIC VIEW OF THE MBIS CONSOLE

ATTACHMENT I

FBIS/MBIS/FBOS/MBOS/OBS FUNCTION LIST

TABLE OF CONTENTS

<u>PANEL</u>	<u>FBIS</u>	<u>PANEL</u>	<u>FBIS</u>
1A		9C	
1B		10A	
1C	1, 2	10B	
2A		10C	
2B		11A	63
2C	4	11B	
3A	15, 16	11C	1, 2, 6
3B		12A	15, 16
3C	6-10, 62	12B	
4A	63	12C	7-10, 62
4B		13A	
4C	7, 49, 54, 55, 57, 58, 60, 61	13B	
5A		13C	4
5B		14A	
5C		14B	
6A		14C	
6B		<u>PANEL</u>	<u>MBIS</u>
6C		1D	
7A		1E	
7B		1F	1, 2
7C	1, 2, 6	2D	
8A		2E	
8B		2F	5
8C	4	3D	15, 16
9A		3E	
9B		3F	6-10, 62

<u>PANEL</u>	<u>MBIS</u>	<u>PANEL</u>	<u>MBIS</u>
4D	63	13E	
4E		13F	5
4F	7, 49-55, 57-61	14D	
5D		14E	
5E		14F	
5F		<u>PANEL</u>	<u>FBOS</u>
6D		21A	
6E		21B	
6F		21C	8-14, 18-25, 54
7D		22A	63
7E		22B	15, 16, 17
7F	1, 2, 6	22C	48, 49, 54, 55, 57, 58, 60, 61, 62
8D		23A	
8E		23B	
8F	5	23C	1, 3, 6
9D		24A	4, 63
9E		24B	
9F		24C	
10D		<u>PANEL</u>	<u>MBOS</u>
10E		21D	
10F		21E	
11D		21F	8, 9, 10, 11, 12, 13, 14, 18-47
11E		22D	63
11F	1, 2, 6	22E	15, 16, 17
12D	15, 16	22F	48-62
12E		23D	
12F	7-10, 62	23E	
13D			

<u>PANEL</u>	<u>MBOS</u>
--------------	-------------

23F	6
-----	---

24D	
-----	--

24E	
-----	--

24F	1, 3, 5
-----	---------

<u>PANEL</u>	<u>OBS-FB</u>
--------------	---------------

41A	
-----	--

41B	7, 11, 12, 48-57, 62
-----	----------------------

LOCATION	Panels 1C, 1F, 7C, 7F, 11C, 11F, 23C and 23F
PANEL TITLE	FLT STA
NOMENCLATURE	(ISOMORPHIC SWITCH ARRAY - c.f. FIGURE 3.1-11)
COLOR	White
TYPE	Switches (65) - not illuminated
FUNCTION	Each of these switches represents a flight station panel, part of a panel, or a group of panels as defined by NASA.
COMMENTS	The switches are arranged to have a similar spatial relationship on the console panel as their corresponding counterparts in the cockpit have. Activation of a particular switch will result in a CRT display of the appropriate NASA-defined panel pages.

LOCATION Panels 1C, 1F, 7C, 7F, 11C and 11F

PANEL TITLE CRT SELECTION (FBIS AND MBIS)

NOMENCLATURE EVENT TIME CMDR, GRAPH CRT CMDR, A/N CRT CMDR, A/N CRT CMDR, GRAPH CRT PILOT, GRAPH CRT PILOT, EVENT TIME PILOT, A/N CRT PILOT, A/N CRT PILOT, GRAPH CRT BOOST, GRAPH CRT DYNAM, EVENT TIME DYNAM**, A/N CRT BOOST & A/N CRT DYNAM.

COLOR White

TYPE Switches (14) - 3C, 7C and 12C - not illuminated
Switches (13) - 3F, 7F and 12F - not illuminated

FUNCTION These switches allow the user to direct subsequent requests for displays and hard copies of the CRT's designated by the switches.

COMMENTS These switches are found on the instructor stations.

These switches are used in conjunction with the ISA (FLT STA and AFT STA) to secure a display or a hard copy of the designated CRT. It is not necessary to redesignate (activate the switch corresponding to the appropriate CRT) the same CRT if it is to be used for sequential displays or hard copies.

The switches are arranged in a special relationship similar to that of the actual CRT's in the individual instructors' working areas.

**On FBIS only.

LOCATION	Panels 23C and 23F
PANEL TITLE	CRT SELECTION (FBOS AND MBOS)
NOMENCLATURE	GRAPH CRT CONTR, A/N CRT CONTR, GRAPH CRT COORD, AND A/N CRT COORD (c.f. FIGURE 3.1-16)
COLOR	White
TYPE	Switches (4) - not illuminated
FUNCTION	These switches allow the user to direct subsequent requests for displays and hard copies of the CRT's designated by the switches.
COMMENTS	<p>These switches are found on the operator stations.</p> <p>These switches are used in conjunction with the ISA (FLT STA and AFT STA) to secure a display or a hard copy of the designated CRT. It is not necessary to redesignate (activate the switch corresponding to the appropriate CRT) the same CRT if it is to be used for sequential displays or hard copies.</p> <p>The switches are arranged in a spacial relationship similar to that of the actual CRT's in the individual operators' working areas.</p>

LOCATION	Panels 2C, 8C, 13C and 24C
PANEL TITLE	AFT STA (FBIS AND FBOS) (ISOMORPHIS SWITCH ARRAY, c.f., FIGURE 3.1-13)
NOMENCLATURE	
COLOR	White
TYPE	Switches (39) - not illuminated
FUNCTION	
COMMENTS	<p>These switches are found on the fixed base consoles only.</p> <p>The switches are arranged to have a similar spacial relationship on the console panel as their corresponding counterparts in the cockpit have. Activation of a particular switch will result in a CRT display of the appropriate NASA-defined panel pages.</p>

LOCATION	Panels 2F, 8F, 13F and 24F
PANEL TITLE	AFT STA (MBIS AND MBOS)
NOMENCLATURE	(ISOMORPHIC SWITCH ARRAY, c.f. FIGURE 3.1-14)
COLOR	White
TYPE	Switches (21) - not illuminated
FUNCTION	Each of these switches represent an Aft Station panel, part of a panel, or a group of panels as defined by NASA.
COMMENTS	<p>These switches are found on the motion base consoles only.</p> <p>The switches are arranged to have a similar spacial relationship on the console panel as their corresponding counterparts in the cockpit have. Activation of a particular switch will result in a CRT display of the appropriate NASA-defined panel pages.</p>

LOCATION	Panels 3C, 3F, 7C, 7F, 11C, 11F, 23C and 23F
PANEL TITLE	CRT SELECTION
NOMENCLATURE	HARD COPY
COLOR	White
TYPE	Switch (1)
FUNCTION	When tripped, this switch will produce a hard copy of the display on the designated CRT (last CRT selected).
COMMENTS	This switch is found on all CRT selection panels of both the instructor and operator stations. Used in conjunction with the ISA (FLT STA and AFT STA) a hard copy of the designated CRT is requested by tripping the hard copy switch. It is not necessary to redesignate the same CRT if it is to be used for sequential displays or hard copies.

LOCATION Panels 3C, 3F, 4C, 4F, 12C, 12F, 31B and 41B

PANEL TITLE FREEZE

NOMENCLATURE FREEZE

COLOR White

TYPE Switchlight (1) - 3C, 3F, 11C, 11F, 31B and 41B. (FBIS, MBIS, FBOS, MBOS, AND OBS).

Indicator light (1) - 4C and 4F (FBIS and MBIS)

FUNCTION The switchlight will stop the simulator at any point when tripped.
The indicator light will light when the simulator is in a freeze condition.

COMMENTS The simulator will freeze automatically when predetermined simulator conditions have been exceeded. The parameters that have been exceeded will be displayed on the CRT.

LOCATION Panels 3C, 3F, 12C, 12F, 21C and 21F

PANEL TITLE LIGHTING

NOMENCLATURE CONSOLE INT

COLOR Matte black with white pointer

TYPE Skirted control knob (1)

FUNCTION This continuously variable control permits the instructors and operators to set the console lighting intensity at an appropriate level.

COMMENTS

LOCATION	Panels 3C, 3F, 12C, 12F, 21C, and 21F
PANEL TITLE	LIGHTING
NOMENCLATURE	IND LAMP INT
COLOR	Matte black with white pointer
TYPE	Skirted Control Knobs
FUNCTION	This continuously variable control permits the instructors or operators to set the intensity of the indicator lights on the associated portion of the console.
COMMENTS	

LOCATION	Panels 3C, 3F, 12C, 12F, 21C and 21F
PANEL TITLE	LIGHTING
NOMENCLATURE	LAMP TEST LEFT and LAMP TEST RIGHT
COLOR	White
TYPE	Switchlights (2)
FUNCTION	The activation of either the lamp test left or lamp test right switchlight will illuminate all indicator lamps on that portion of the console.
COMMENTS	To avoid excessive power supply loading during lamp test, the IS and OS consoles are divided into sections for lamp test. Each section will contain an integral number of panels (i.e., no panels test from more than one location). Lamp power for IS and OS lighting will come from remotely programmable power supplies. Individual supplies will be provided for each of these sections. Each IO and OS light will have a dedicated relay as that lamp test will not affect cockpit operation.

LOCATION	Panels 21C, 21F and 41B
PANEL TITLE	AURAL CUE
NOMENCLATURE	AURAL VOLUME - (MIN-MAX)
COLOR	Matte black with white pointer
TYPE	Skirted Control Knob (1)
FUNCTION	This continuously variable control permits the operator to control the volume of the aural cue system.
COMMENTS	

LOCATION Panels 21C, 21F and 41B

PANEL TITLE AURAL CUE

NOMENCLATURE AURAL ON

COLOR White

TYPE Switchlight (1)

FUNCTION This switchlight turns the aural cue system on and off.

COMMENTS

LOCATION Panels 21C and 21F

PANEL TITLE AURAL CUE

NOMENCLATURE WARN VOLUME - (MIN-MAX)

COLOR Matte black with white pointer

TYPE Skirted Control Knob (1)

FUNCTION This continuously variable control permits the operators to control
the volume of the caution and warning system.

COMMENTS

LOCATION Panels 21C and 21F

PANEL TITLE AURAL CUE

NOMENCLATURE WARN ON

COLOR White

TYPE Switchlight (1)

FUNCTION This switchlight turns the caution and warning system on and off.

COMMENTS

LOCATION	Panels 3A, 3D, 12A, 12D, 22B and 22E
PANEL TITLE	(SPEAKER)
NOMENCLATURE	SPEAKER VOLUME (MIN-MAX)
COLOR	Matte black with white pointer
TYPE	Skirted Control Knob (1)
FUNCTION	This continuously variable control permits the instructors and operators to set the intensity of sound through the speakers at appropriate levels.
COMMENTS	

LOCATION	Panels 3A, 3D, 12A, 12D, 22B and 22E
PANEL TITLE	(SPEAKER)
NOMENCLATURE	SPEAKER ON
COLOR	White
TYPE	Switchlight (1)
FUNCTION	This control turns the adjacent speaker on and off.
COMMENTS	

LOCATION Panels 22B and 22E

PANEL TITLE (SPEAKER)

NOMENCLATURE AURAL CUE

COLOR White

TYPE Switchlight (1)

FUNCTION This switch, when activated, sends aural cue sound through the speakers at the IS and OS provided that the speakers are turned on.

COMMENTS

LOCATION	Panels 21C and 21F
PANEL TITLE	VISUAL SYSTEM STATUS
NOMENCLATURE	DC POWER ON - VIS POWER CAB, GANTRY CONTRL CAB, CAMERA CAB, XMSN CAB, DISPL POWER CAB #1, AND DISPL POWER CAB #2.
COLOR	White
TYPE	Indicator lights (6)
FUNCTION	When illuminated, these lights indicate that DC power is on at the designated visual system cabinets.
COMMENTS	

LOCATION	Panels 21C and 21F
PANEL TITLE	VISUAL SYSTEM STATUS
NOMENCLATURE	OVERHEAT - VIS POWER CAB, GANTRY CONTRL CAB, CAMERA CAB, XMSN CAB, DISPL POWER CAB #1, DISPL POWER CAB #2, MODE ILLUM, AND 15 TBD ON FBOS AND 5 TBD ON MBOS.
COLOR	Yellow
TYPE	Indicator lights (22) - 21C (FBOS) Indicator lights (12) - 21F (MBOS)
FUNCTION	When illuminated, these lights indicate an overheat condition in the designated visual system cabinet. These lights will remain lighted until the overheat condition is corrected.
COMMENTS	When an overheat occurs, an alarm bell will sound (c.f. BELL OFF - NEXT PAGE)

LOCATION Panels 21C and 21F

PANEL TITLE VISUAL SYSTEM STATUS

NOMENCLATURE BELL OFF

COLOR White

TYPE Switchlight (1)

FUNCTION This switchlight permits the operator to turn off the overheat alarm bell. Once activated, this switchlight will remain lighted until the overheat condition is corrected.

COMMENTS

LOCATION	Panels 21C and 21F
PANEL TITLE	VISUAL SYSTEM STATUS
NOMENCLATURE	MAINT SEL - GANTRY CONTRL CAB, CAMERA CAB, and XMSN CAB
COLOR	White
TYPE	Indicator lights (3)
FUNCTION	When illuminated, these indicator lights denote the maintenance mode has been selected at the designated cabinet.
COMMENTS	

LOCATION	Panels 21C and 21F
PANEL TITLE	VISUAL SYSTEM STATUS
NOMENCLATURE	GANTRY STATUS - OVERSPEED, GANTRY IN LIMIT and PROBE PROTECT
COLOR	Yellow
TYPE	Indicator lights (3)
FUNCTION	When illuminated, these lights provide a warning of gantry status conditions.
COMMENTS	

LOCATION Panels 21C and 21F

PANEL TITLE SIMULATOR STATUS

NOMENCLATURE BELL OFF

COLOR White

TYPE Switchlight (1)

FUNCTION This switchlight permits the operator to turn off the overheat alarm bell. Once activated, this switchlight will remain lighted until the overheat condition is corrected.

COMMENTS

LOCATION Panels 21C and 21F

PANEL TITLE SIMULATOR STATUS

NOMENCLATURE CS BLOWRS OFF, and ONE TBD

COLOR Yellow

TYPE Indicators Lights (2)

FUNCTION When illuminated, these lights indicate that the crew station and instructor station blowers associated with the MCDS system are not operating.

COMMENTS

LOCATION	Panels 21C and 21F
PANEL TITLE	SIMULATOR STATUS
NOMENCLATURE	OVERHEAT - OPER STA, INSTR STA, CREW STA, PDU, ICU and MOTION ELECTR**
COLOR	Yellow
TYPE	Indicator Lights (6)
FUNCTION	When illuminated, these lights indicate an overheat condition in the designated cabinet. These lights will remain lighted until the overheat condition is corrected.
COMMENTS	When an overheat occurs, an alarm bell will sound.

**MBOS only - TBD on FBOS

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	AUTO/MAN
COLOR	White
TYPE	Indicator Light (Split Screen)
FUNCTION	Indicates that the motion system is in either the manual or the automatical control mode.
COMMENTS	

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	DC VOLT SENSE
COLOR	Yellow
TYPE	Indicator Light (1)
FUNCTION	When illuminated, indicates that the DC power supply is out of tolerance.
COMMENTS	

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE CYL TRACK ERROR

COLOR Yellow

TYPE Indicator Light (1)

FUNCTION When illuminated, indicates that servo error is out of tolerance.

COMMENTS

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE MOTION EXCURS LIMITS

COLOR Yellow

TYPE Indicator Light (1)

FUNCTION Illuminates whenever any actuator approaches within 1/2" of its travel limit.

COMMENTS

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	SETTLD POS
COLOR	Yellow
TYPE	Indicator Light (1)
FUNCTION	Indicates that the platform is not in the settled position as commanded.
COMMENTS	

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE ON/OFF

COLOR White

TYPE Indicator Light (Split Screen) (1)

FUNCTION This light idicates that motion system power is on or off.

COMMENTS

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	AC PWR/DC PWR
COLOR	White
TYPE	Indicator Light (Split Screen) (1)
FUNCTION	This light indicates that AC and DC power have been turned on.
COMMENTS	

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	SIGNAL XFR
COLOR	Yellow
TYPE	Indicator Light (1)
FUNCTION	This light illuminates when signal transfer is not occurring properly.
COMMENTS	

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE PLATFORM - ENABLE/DN CMD

COLOR

TYPE Indicator Light (1)

FUNCTION ENABLE indicates that the motion base is settled and that the lift platform can be operated.

DN CMD indicates that the lift platform is being commanded to the down position by the motion system.

COMMENTS

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE PERIPHERAL EQUIPMENT - AUTO/MANUAL

COLOR White

TYPE Indicator Light (Split Screen) (1)

FUNCTION Indicates that the peripheral equipment is in the automatic or
manual mode.

COMMENTS

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	CMPTR PRGRM CHECKS
COLOR	Yellow
TYPE	Indicator Light (1)
FUNCTION	This light illuminates when the computer program check is not satisfactory.
COMMENTS	

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE PERIPHERAL EQUIP
 CMPTR LINKAGE CHECKS

COLOR Yellow

TYPE Indicator Light (1)

FUNCTION This light illuminates when the computer check of the linkage is
 not satisfactory.

COMMENTS

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	MANUAL CONTROL - PUMP START/STOP
COLOR	White
TYPE	Indicator Light (Split Screen) (1)
FUNCTION	This light indicates the start or stop condition of the pump in the manual control mode.
COMMENTS	

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	MANUAL CONTROL ERECT/SETTLE
COLOR	White
TYPE	Indicator (Split Screen) (1)
FUNCTION	This light will illuminate when in the manual control mode the erect or settled condition of the motion base is realized.
COMMENTS	

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	MANUAL CONTROL - SYSTEM CONTROL MAINT and PERIPH
COLOR	White
TYPE	Indicator Lights (2)
FUNCTION	These lights indicate the position of the key-switch on the motion cabinet.
COMMENTS	

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	PUMP CONTROL SIM AUTO, SIM MAN, and MAINT PANEL
COLOR	White
TYPE	Indicator Lights (3)
FUNCTION	These lights indicate the pump control mode.
COMMENTS	

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	PUMP - FILTER
COLOR	Yellow
TYPE	Indicator Light (1)
FUNCTION	When illuminated, this light indicates the need for filter maintenance.
COMMENTS	

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	PUMP - MOTION PUMP 1 and MOTION PUMP 2
COLOR	White
TYPE	Indicator Lights (2)
FUNCTION	Illumination of either of these lights indicates that the corresponding pumps have been turned on.
COMMENTS	

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE PUMP -
 HYDR FLUID LEVEL

COLOR Yellow

TYPE Indicator Light (1)

FUNCTION Illumination of this light indicates that the hydraulic fluid has
dropped below its normal level.

COMMENTS

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE PUMP -
 HYDR FLUID TEMP

COLOR Yellow

TYPE Indicator Light

FUNCTION Illumination of this light indicates that the hydraulic fluid
 temperature is in excess of 150° F.

COMMENTS

LOCATION Panel 21F

PANEL TITLE MOTION SYSTEM STATUS

NOMENCLATURE MOTION BASE HYDRAULICS -
1 FLTR/4 FLTR, 2 FLTR/5 FLTR, 3 FLTR/6FLTR, and 7 FLTR

COLOR Yellow

TYPE Indicator Lights (4) (Split Screens)

FUNCTION Illumination of any of these lights indicates the corresponding filter needs maintenance.

COMMENTS

LOCATION	Panel 21F
PANEL TITLE	MOTION SYSTEM STATUS
NOMENCLATURE	MOTION BASE HYDRAULICS MOTION MNFOLD PRESS
COLOR	Yellow
TYPE	Indicator Light
FUNCTION	Illumination of this light indicates loss of pressure at motion distribution manifold.
COMMENTS	

LOCATION Panels 22C, 22F and 41B

PANEL TITLE SIM MODE

NOMENCLATURE OBS CONT

COLOR White

TYPE Switch (1) - 22C and 22F
Indicator Light (1) - 31B and 41B

FUNCTION Activation of the OBS CONT switchlight by either operator transfers control from that operator's console to his respective in-cockpit observer's console. When an observer has control, the OBS CONT indicator light on the observer's station and the switchlight on the operator's station will be illuminated.

COMMENTS

LOCATION Panels 4C, 4F, 22C, 22F and 41B

PANEL TITLE SIM MODE (FBOS, MBOS and OBS)
SIM MODE STATUS (FBIS and MBIS)

NOMENCLATURE IS ACTIVE

COLOR White

TYPE Indicator Light (1) - 4C, 4F and 41B (FBIS, MBIS and OBS)
Switchlight (1) - 22C and 22F (FBOS and MBOS)

FUNCTION The operators' switchlights, when activated, permit the instructor to make command inputs in lieu of the crew station. These command inputs are entered via the CRT and keyboard for both continuous control and switch positions. Displays will be active at both the instructor and crew stations during this mode of operation. In addition, the instructor's "in-cockpit keyset" (Panel 4C - FBIS, Panel 5F - MBIS), is active during this mode.

COMMENTS

LOCATION	Panels 4F, 22F and 41B
PANEL TITLE	MOTION SYSTEM (MBOS and OBS) MOTION SYSTEM STATUS (MBIS)
NOMENCLATURE	MOTION ON
COLOR	White
TYPE	Indicator Light (1) - 4F (MBIS) Switchlight (1) - 22F and 41B (OBS-MB)
FUNCTION	This switchlight activates the motion system provided the interlocks are satisfied. The motion platform will erect to its neutral position prior to responding to flight control inputs. The indicator light at the MBIS indicates that the motion system has been activated.
COMMENTS	The switchlight will be provided with clear, spring-loaded plastic covers to protect this control from inadvertant actuation.

LOCATION	Panels 4F, 22F and 41B
PANEL TITLE	MOTION SYSTEM (OS and OBS) MOTION SYSTEM STATUS (IS)
NOMENCLATURE	MOTION OFF
COLOR	White
TYPE	Indicator Light (1) - 4F (MBIS) Switchlight (1) - 22F and 41B (MBOS and OBS-MB)
FUNCTION	This switchlight deactivates the motion platform. The motion platform returns to the neutral position prior to returning to the completely settled position. The indicator light at the MBIS indicates that the motion system has been deactivated.
COMMENTS	The switchlight will be provided with clear, spring-loaded, plastic covers to protect this control from inadvertent actuation.

LOCATION	Panels 4F, 22F and 41B
PANEL TITLE	MOTION SYSTEM (MBOS and OBS-MB) MOTION SYSTEM STATUS (MBIS)
NOMENCLATURE	EXT PITCH
COLOR	White
TYPE	Indicator Light (1) - 4F (MBIS) Switchlight (1) - 22F and 41B (MBOS and OBS-MB)
FUNCTION	The switchlights permit rotation of the cockpit to the launch position. The status of the extended pitch switch is repeated at the MBIS.
COMMENTS	This switchlight will be provided with a clear, spring-loaded plastic cover to protect from inadvertent actuation.

LOCATION	Panels 4F, 22F and 41B
PANEL TITLE	MOTION SYSTEM (MBOS and OBS-MB) MOTION SYSTEM STATUS (MBIS)
NOMENCLATURE	INTERLOCKS - THRML CUTOUT, RAMP, DOOR AND MAINT.
COLOR	Yellow
TYPE	Indicator Lights (4) - MBIS
FUNCTION	These indicator lights illuminate to indicate that the corresponding motion interlock is open. The motion platform will not be operable until the interlock is satisfied.
COMMENTS	

LOCATION Panels 4C, 4F, 22C, 22F and 41B

PANEL TITLE VISUAL SYSTEM

NOMENCLATURE VISUAL AVAILABLE

COLOR White

TYPE Indicator Light (1)

FUNCTION This indicator light illuminates when visual system power is on
and indicates that the visual system is ready to operate.

COMMENTS

LOCATION	Panels 4C, 4F, 22C, 22F and 41B
PANEL TITLE	VISUAL SYSTEM (FBOS, MBOS, and OBS-MB) VISUAL SYSTEM STATUS (IS) - (FBIS and MBIS)
NOMENCLATURE	OPER/IN RESET
COLOR	White
TYPE	Indicator Light (1) (Split Screen) - 4C and 4F (FBIS and MBIS) Switchlight (1) (Split Screen) - 22C, 22F and 41B (FBOS, MBOS and OBS-MB)
FUNCTION	This switchlight activates the visual system and slews the probe to the commanded position. The lower half of this control (IN RST) remains illuminated until reset is completed. The indicator lights at the FBIS and MBIS repeats the status of the FBOS and MBOS, or the OBS-FB and OBS-MB switchlights.
COMMENTS	

LOCATION Panels 22C, 22F and 41B

PANEL TITLE SIMULATOR CONTROL

NOMENCLATURE RUN

COLOR White

TYPE Switchlight (1)

FUNCTION This switchlight causes the simulator to commence operation from
the point at which it was frozen.

COMMENTS

LOCATION	Panels 4C, 4F, 22C, 22F and 41B
PANEL TITLE	SIMULATOR CONTROL (FBOS, MBOS and OBS-MB) SIMULATOR CONTROL STATUS (FBIS and MBIS)
NOMENCLATURE	RESET IN PROG.
COLOR	White
TYPE	Indicator Light (1)
FUNCTION	This indicator light illuminates while the simulator is in the process of resetting. Reset for initial conditions or playback is initiated via the CRT and keyboard. When the light is extinguished, the simulator is ready to run again.
COMMENTS	

LOCATION Panels 4C, 4F, 22C and 22F

PANEL TITLE MAJOR EQUIP STATUS

NOMENCLATURE VIS AVAILABLE

COLOR White

TYPE Indicator Light (1)

FUNCTION This indicator light is illuminated when the visual system is on and indicates that the visual system is ready to operate.

COMMENTS

LOCATION Panels 4F and 22F

PANEL TITLE MAJOR EQUIP STATUS

NOMENCLATURE MOTION AVAIL

COLOR White

TYPE Indicator Light (1)

FUNCTION When illuminated, this light indicates that the motion system is ready for operation.

COMMENTS

LOCATION Panels 4C, 4F, 22C and 22F

PANEL TITLE MAJOR EQUIP STATUS

NOMENCLATURE LINKAGE

COLOR White

TYPE Indicator Light (1)

FUNCTION When illuminated, this indicates that the computer linkage is ready for operation.

COMMENTS

LOCATION Panels 4C, 4F, 22C and 22F

PANEL TITLE MAJOR EQUIP STATUS

NOMENCLATURE SIM POWER ON

COLOR White

TYPE Indicator Light (1)

FUNCTION This light illuminates when simulator power has been turned on
at the main power cabinet.

COMMENTS

LOCATION	Panels 3C, 3F, 12C, 12F, 22C, 22F, 31B and 41B
PANEL TITLE	MASTER POWER CONTROL
NOMENCLATURE	EMER STOP
COLOR	Red
TYPE	Switchlight (1)
FUNCTION	Activation of this switchlight will turn off simulator power.
COMMENTS	Barriers and a clear, spring-loaded, plastic cover will be provided to protect this control from inadvertent activation.

LOCATION Panels 4A, 4D, 11A, 22A, 22D and 23A

PANEL TITLE VISUAL SYSTEM MONITOR

NOMENCLATURE SCENE SELECT -
LEFT/CTR/RIGHT

COLOR Matte Black with White Pointer

TYPE 3 Position Rotary Control Knob (1)

FUNCTION This selector switch permits the instructor and operator to display the left, center or right visual system display from the overall window group selected (group selection via CRT and keyboard.)

COMMENTS

SMS PROGRAM DIRECTIVE

1. INITIATOR	2. ORIGINATOR	3. DATE	4. NO.
R. L. MYERS	JSC	4/21/76	N22-001P
5. TITLE			
ADDITION OF MAJOR FUNCTION SWITCH TO FBIS & MBIS			
6. DESCRIPTION OF PROBLEM			
CURRENTLY THE FBIS & MBIS ARE PROVIDED WITH AN MDCS ^{MDCS} KEYBOARD. THERE IS NO MAJOR FUNCTION SWITCH TO ALLOW THE INSTRUCTOR TO SELECT THE SOFTWARE (GNC, SM, OR PL) INTO WHICH THE INSTRUCTOR WILL MAKE HIS KEYBOARD ENTRIES.			
7. RECOMMENDATION			
PROVIDE A MAJOR FUNCTION SWITCH AT EACH INSTRUCTOR STATION ADJACENT TO EACH MDCS KEYBOARD.			
8. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED			
USE OF KEYBOARD WILL BE SEVERLY IMPACTED BECAUSE THE INSTRUCTOR WILL HAVE TO GO UP INTO THE CREW STATION TO PROPERLY CONFIGURE THE MAJOR FUNCTION SWITCH.			
9. CONCURRENCE			
ANS. WORKER		TEAM LEADER	
<i>B M Gifford</i>		<i>B M Gifford</i>	
10. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
11. COMMENT			
APPROVAL			
TECHNICAL MANAGER		DATE	
<i>L. Oladsky</i>		<i>4/22/76</i>	
12. CONTRACTOR'S IMPACT STATEMENT			
NO SCHEDULE IMPACT - COST LESS THAN \$2000.			
<i>LeBrow</i> <i>4/22/76</i>			
13. ACTION			
57			
APPROVED		DATE	
<i>McCafferty</i>		<i>4/22/76</i>	

SMS PROGRAM DIRECTIVE

1. INITIATOR T. GEREK	ORGANIZATION SPD	DATE 4/20/76	NO. S22-001P
TITLE OBSERVER CRT			
2. DESCRIPTION OF PROBLEM DUE TO REQUIREMENT TO HAVE A RELOCATABLE CRT IN CREW STATIONS, A SMALL SIZE CRT IS REQUIRED. PRESENT RUGGIZED COLOR MONITORS ARE TOO LARGE FOR THIS APPLICATION.			
3. RECOMMENDATION USE A MONOCHROME SMALL PORTABLE CRT RUGGIZED TO WITHSTAND MBCS FORCES.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED CRT FOR THE OBSERVERS CONSOLE WILL BE TOO LARGE TO BE EASILY RELOCATABLE FROM FBSC & MBSC.			
5. CONCURRENCE			
SBS MANAGER <i>B.M. Gifford</i>		T. AM. LEADER <i>B.M. Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENT			
APPROVAL			
TECHNICAL MANAGER <i>L. Clark</i>		DATE 4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT NO COST OR SCHEDULE IMPACT.			
<i>LeBrow</i> 4/22/76			
8. SCS ACTION			
5R			
APPROVAL <i>McClafferty</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE

1. INITIATOR C. OLASKY	ORGANIZATION NASA	DATE 4/21/76	PROJECT N22-002P
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DELETION OF INCOCKPIT IOS FOR FBCSS

2. DESCRIPTION OF PROBLEM:

THE FIXTURE FOR HOUSING THE INCOCKPIT CRT WILL BLOCK ACCESS TO PORTIONS OF PSS AND OS C&D IN THE FBCS. DIMENSIONS OF FIXTURE (PEDESTAL MOUNT), REFERENCE FIG. 3.1-8 OF EDR, WOULD MAKE INSERTION/REMOVAL DIFFICULT THRU THE FBCS INGRESS/EGRESS HATCHES.

3. RECOMMENDATION:

DELETE REQUIREMENT FOR INCOCKPIT IOS FOR FBCSS.

4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED:

UNIT COULD ONLY BE INSTALLED FOR CMD AND PILOT PART TASK TRAINING (FORWARD C/S ONLY) FOR OFT MISSION 3 AND SUBS.

5. CONCURRENCE

ABS MANAGER B.M. Gifford	TEAM LEADER B.M. Gifford
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6. DISPOSITION

☐ Approved
 ☐ Disapproved
 ☐ Withdrawn
☐ Tech. Direction
 ☒ Contractor's Impact Statement Req.

COMMENTS:

APPROVAL

TECHNICAL MANAGER C. Olasky	DATE 4/22/76
--------------------------------	-----------------

7. CONTRACTING IMPACT STATEMENT:

NO SCHEDULE IMPACT. COST REDUCTION UNDETERMINED AMOUNT AT THIS TIME. EFFECTIVENESS OF OBS IN THE FBCS FOR TEST DEBUG PURPOSE IS MINIMAL DUE TO ABOVE BLOCKAGE OF AFT PANELS AND SPACE LIMITATIONS.

Brown - 4/22/76

8. SCP ACTION:

5R

APPROVAL

TECHNICAL MANAGER McCafferty	DATE 4/22/76
---------------------------------	-----------------

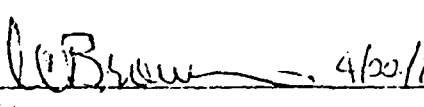
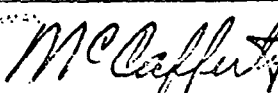
SMS PROGRAM DIRECTIVE

1. INITIATOR B. M. GIFFORD	ORGANIZATION NASA	DATE 4/21/76	PROJECT N22-007P
2. TITLE POWER ON LIGHT DELETION			
3. DESCRIPTION OF PROBLEM POWER AVAILABLE INDICATOR ON EACH IS AND OS SHOWS ONLY THAT PRIMARY POWER IS TURNED ON IN THE POWER CABINET. CHANGE TO CHECK OPERATION OF UNITS SUCH AS SID AND 8-32's WOULD BE DIFFICULT AND COSTLY.			
4. RECOMMENDATION DELETE POWER-ON INDICATOR, PROVIDES NO USEFUL INFORMATION.			
5. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED POWER-ON LIGHT COULD PROVIDE ERRONEOUS ASSURANCE THAT EQUIPMENT IS FUNCTIONING.			
6. CONCURRENCE			
APPROVED BY <i>B M Gifford</i>		TEAM LEADER <i>B M Gifford</i>	
7. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
8. APPROVAL			
TECHNICAL MANAGER <i>L. Mackey</i>		DATE 4/22/76	
9. CONTRACTOR'S IMPACT STATEMENT NO COST OR SCHEDULE IMPACT. <i>McBrow</i> 4/22/76			
10. FOR ACTION			
Cat 1			
APPROVAL <i>McClafferty</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE

1. INITIATOR R. L. MYERS	ORGANIZATION JSC	DATE 4/21/76	NO. N22-003P
2. TITLE MBIS COMM PANEL ON PANEL 14E			
3. DESCRIPTION OF PROBLEM ARRANGEMENT OF COMM PANELS DOES NOT ALLOW FOR MAXIMUM SHARING OF A/N CRT'S WHEN CONSOLE IS FULLY MANNED. ALSO, DECREASES EXPANSION CAPABILITY.			
4. RECOMMENDATION MOVE COMM PANEL FROM 14E TO 9E ON MBIS.			
5. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED OPTIMUM USE OF CONSOLE CAPABILITIES WILL NOT BE REALIZED WHEN CONSOLE IS FULLY MANNED. UNNECESSARY DECREASE IN EXPANSION CAPABILITY.			
6. CONCURRENCE SR MANAGER <i>B M Gifford</i>		TEAM LEADER <i>B M Gifford</i>	
7. DISPOSITION <input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
8. COMMENTS			
APPROVAL TECHNICAL MANAGER <i>L. Blarkey</i>		4/22/76	
9. CONTRACTOR'S IMPACT STATEMENT NO COST OR SCHEDULE IMPACT. <i>CBrown</i> 4/22/76			
10. SOP ACTION			
57 APPROVAL CM CHAIRMAN <i>McCauley</i>		4/22/76	

SMS PROGRAM DIRECTIVE

1. INITIATOR	ORGANIZATION	DATE	NO.
R. L. MYERS	JSC	4/21/76	N22-004P
2. DESCRIPTION OF PROBLEM:			
THE CRT SELECTION PANEL UTILIZES NAMES SUCH AS "A/N CRT COMMANDER" AND "EVENT TIME PILOT" TO INDICATE WHICH CRT THAT PANEL DISPLAYS WILL BE ROUTED TO OR WHICH CRT'S WILL BE HARDCOPIED.			
3. RECOMMENDATION:			
SEQUENTIALLY NUMBER THE CRT'S AND PUT DECALS WITH THE NUMBERS ON THEM ADJACENT TO THE CRT'S. USE THE SAME NUMBERS ON THE CRT SELECTION PANELS.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED:			
DIFFICULT OR IMPOSSIBLE TO REMEMBER THE VERBAL DESIGNATION FOR ALL CRT'S. THIS IS A GREATER PROBLEM THAN IT APPEARS TO BE AT FIRST GLANCE SINCE CRT UTILIZATION ON THE IS WILL CHANGE FOR DIFFERENT MISSION PHASES.			
5. CONCURRENCE			
FOR MR. G. J. G. J. G.		FOR MR. G. J. G. J. G.	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Request Not to Proceed			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER		DATE	
L. Clark		4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT:			
NO COST OR SCHEDULE IMPACT.			
 4/22/76			
8. SCS ACTION:			
57 APPROVAL  4/22/76			

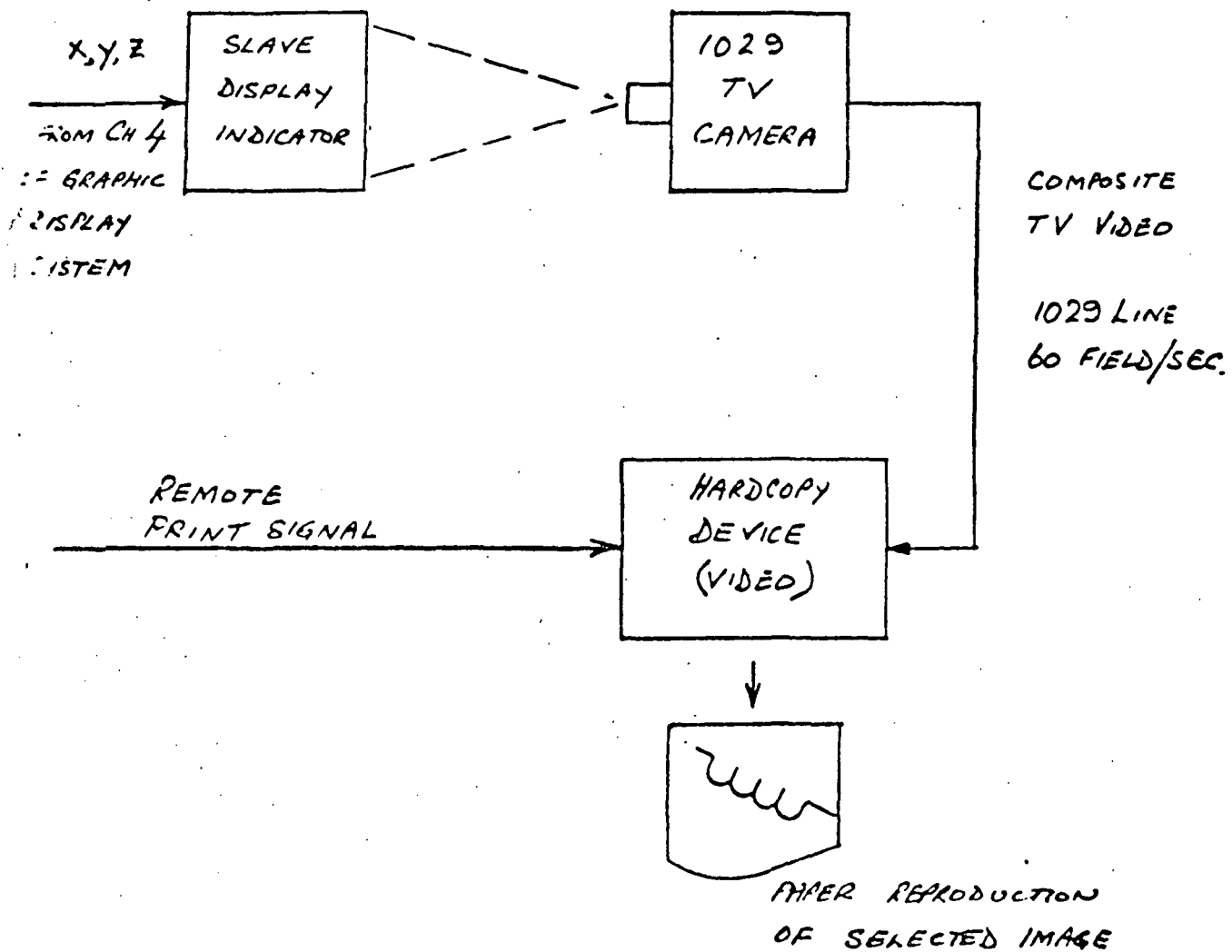
SMS PROGRAM DIRECTIVE

1. INITIATOR	2. ORGANIZATION	3. DATE	4. NO.
R. L. MYERS	JSC	4/21/76	N22-005P
5. TITLE FBIS PANELS 13a, 13b, 14a and 14b CRT ALLOCATION			
6. DESCRIPTION OF PROBLEM THE PLACEMENT OF THE HARDWARE ON PANELS 13a AND 14a, AND 13a AND 14b HAS BEEN REVERSED SINCE THE IOS CONCEPTS MEETING DURING FACT FINDING.			
7. RECOMMENDATION EXCHANGE GRAPHIC CRT ON PANEL 13a AND A/N CRT ON PANEL 14a. EXCHANGE A/N CRT ON PANEL 14b AND DU ON PANEL 14b.			
8. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED PROPOSED LAYOUT IS NOT COMPATIBLE WITH PLANNED CONSOLE OPERATIONS.			
9. CONCURRENCE			
APPROVAL <i>B m Gifford</i>		APPROVAL <i>B m Gifford</i>	
10. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
11. COMMENTS			
12. APPROVAL			
TECHNICAL MANAGER <i>L. O'Leary</i>		DATE 4/22/76	
13. CONTRACTOR'S IMPACT STATEMENT NO COST OR SCHEDULE IMPACT. <i>LeBrow</i> 4/22/76			
14. SFC ACTION			
57			
APPROVAL FOR CHAIRMAN <i>McClintock</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE

1. INITIATOR	ORGANIZATION	DATE	NO.
T. GEREK	SPD	4/21/76	S22-002P
TITLE			
GRAPHIC HARD COPY			
2. DESCRIPTION OF PROBLEM:			
THE PROPOSED GRAPHIC HARD COPY IN PDR DOCUMENTATION WAS DETERMINED TO BE DEFICIENT IN QUALITY.			
3. RECOMMENDATION:			
USE A HI-RESOLUTION HARD COPY WHICH ELIMATES THE NEED FOR TV MONITOR AND VIDEO RECORDER AND CHANGE TV CAMERA FROM A 525 LINE SYSTEM TO A 1029 LINE SYSTEM.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED:			
THE PRESENTLY PROPOSED HARD COPY SYSTEM WILL BE OF POOR QUALITY.			
5. CONCURRENCE			
APPROVER		TECH. SPECIALIST	
<i>B M Gifford</i>		<i>B M Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER		DATE	
<i>L. Clackey</i>		<i>4/22/76</i>	
7. CONTRACTOR'S IMPACT STATEMENT:			
COST SAVINGS IF NEW APPROACH IS APPROVED.			
<i>W Brown</i> <i>4/22/76</i>			
8. SCD ACTION:			
<i>5R</i>			
APPROVAL			
SCD CHAIRMAN		DATE	
<i>McCafferty</i>		<i>4/22/76</i>	

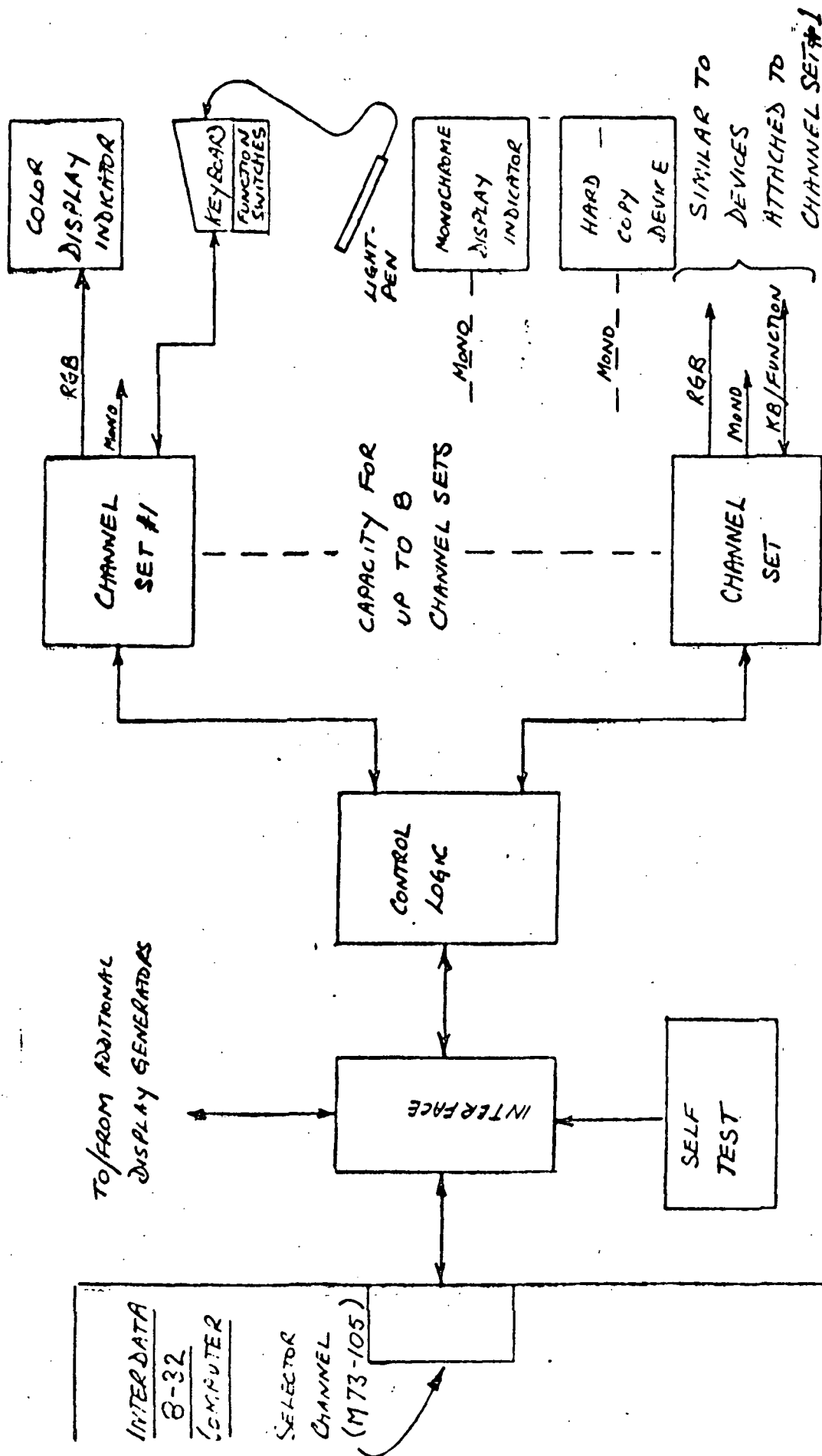
HI-RESOLUTION
HARD COPY



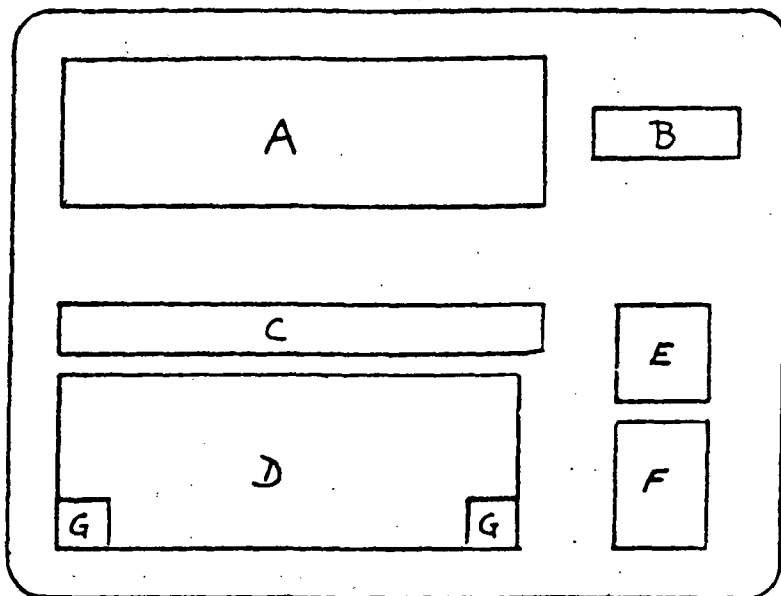
<u>ITEM</u>	<u>IMAGE RECORDING SYSTEM</u>	<u>DISPLAY SNAPSHOT SYSTEM</u>
SYSTEM COMPONENTS	SLAVE CRT, TV CAMERA, TV MONITOR VIDEO RECORDER, VIDEO/HARDCOPY DEVICE VIDEO RECORDER ONLY	SLAVE CRT, TV CAMERA, VIDEO HARDCOPY DEVICE HARDCOPY DEVICE
INFINITE CONTROL SIGNALS CONVERSION PROCESS	XYZ TO TV VIDEO TV CAMERA USED FOR CONVERSION	XYZ TO TV VIDEO TV CAMERA USED FOR CONVERSION
TV STANDARD	525 LINES 2:1 INTERLACE 25 FRAMES/SECOND 60 FIELDS/SECOND	525 LINES 2:1 INTERLACE 25 FRAMES/SEC 60 FIELDS/SECOND
LIMITING RESOLUTION 1" ASCE	VIDEO RECORDER (5MHz) 400 HORIZONTAL 350 VERTICAL	HARDCOPY DEVICE (29 MHz) 840 HORIZONTAL 630 VERTICAL
REQUIRED CHARACTER SIZE RATIO H/W = 3/2 K=7	.34 H x .22 W (H=7 PIXELS) .24 H x .15 W (H=5 PIXELS)	.19 - 1.1 W (H=7 PIXELS) .5 H x .10 W (H=5.6 PIXELS)
PICTURE QUALITY	GOOD (EVALUATED)	GOOD (PREDICTED)
HARDCOPY AVAILABLE	AT END OF MISSION	CONCURRENT WITH MISSION
MEANS OF GENERATING COPY	MANUAL OPERATION PER COPY	AT 8 SEC. INTERVALS AUTOMATIC
IMAGE STORAGE METHOD	CONTINUOUS RECORDING OF INCIDENT - FOLLOWED BY PRINTING OF A STATIC 8 SEC INTERVAL	STATIC SNAPSOTS - CAPTURE TIME < .5 SEC.
STORAGE MEDIA	VIDEO TAPE & PAPER	PAPER
MEANS OF INITIATING IMAGE CAPTURE	SELECTED DISPLAY IMAGE RELATED TO RECORDING CRT. VTR ACTIVATED FOR REQUIRED INTERVAL. OPERATION REPEATED FOR EACH SELECTED INCIDENT.	SELECTED DISPLAY IMAGE CAPTURED TO FIFO DISC FILE. CONTROL SOFTWARE SPOOLS IMAGES TO COPY DEVICE AT 8 SEC INTERVALS. DISC CAPACITY

SMS PROGRAM DIRECTIVE

1. INITIATOR	ORGANIZATION	DATE	PROJECT
B. GIFFORD	JSC	4/21/76	N22-009P
TITLE			
IS/OS COLOR DISPLAY INDICATOR			
2. DESCRIPTION OF PROBLEM TWO TYPES OF RGB COLOR DISPLAY INDICATORS ARE AVAILABLE FOR INSTALLATION INTO THE IS OR OS CONSOLES (NOT ON-BOARD IS). THESE ARE THE CONRAC RHN/19 AND THE AYDIN 8020 DISPLAY INDICATORS. THE RHN 19 WAS A TRIAD TYPE OF SHOW MASK WHICH PROVIDES BETTER CHARACTERS RESOLUTION ON THE SCREEN BUT DOES REQUIRE CONVERGENCE ALIGNMENT MAINTENANCE. THE AYDIN 8020 HAS POOR CHARACTERS RESOLUTION BUT DOES NOT REQUIRE CONVERGENCE MAINTENANCE, DUE TO THE USE OF THE RCA PRECISION IN-LINE TUBE WHICH HAS SHORT VERTICAL SLITS RATHER THAN COLOR DOT TRIADS.			
3. RECOMMENDATION			
USE THE SHADOW MASK (CONRAC) TUBES.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED:			
DISPLAY WILL APPEAR LESS "SHARP" WITH AYDIN DISPLAY			
5. CONCURRENCE			
APPROVED BY		TEAM LEADER	
<i>B M Gifford</i>		<i>B M Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
REMARKS			
APPROVAL			
TECHNICAL MANAGER		DATE	
<i>L. Clarke</i>		4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT:			
THERE ARE 21 COLOR MONITORS IN THE SMS CONFIGURATION. DISPLAY INDICATOR LIST PRICES. AYDIN 8020 \$1,750.00 CONRAC RHN 19 \$3,655.00 <i>Program plan currently includes Aydin display indicators @ 1,750/each.</i> <i>Brown - 4/22/76</i>			
8. ACTION			
<i>Cat 1</i> APPROVAL CONTRACTOR <i>M C Coffey</i>			
		DATE	
		4/22/76	



COLOR ALPHA-NUMERIC DISPLAY SYSTEM
COMPONENT DESCRIPTION



KEYBOARD ARRANGEMENT

- A - FUNCTION KEYS (QTY 45)
- B - DISPLAY CHANNEL SELECT
- C - CONTROL KEYS
- D - CHARACTER KEYS
- E - CURSOR DIRECTION CONTROL
- F - NUMERIC KEY PAD
- G - SHIFT KEYS

SMS PROGRAM DIRECTIVE

1. INITIATOR <u>C. MORTIMER</u>	ORGANIZATION <u>SPD</u>	DATE <u>4/21/76</u>	NO. <u>S22-003P</u>
TITLE <u>LIGHT PEN</u>			
2. IDENTIFICATION OF PROBLEM INTERACTION OF THE USER WITH COMPLEX CRT PAGES REQUIRES EXTENSIVE CURSOR CONTROL BY KEYS PROVIDING CURSOR MOVEMENT IN 8 DIRECTIONS. THIS IS A TEDIOUS AND TIME CONSUMING OPERATION NOT CONDUCTIVE TO DIRECT SIMULATOR COMMAND/CONTROL.			
3. RECOMMENDATION SUPPLEMENT THE KEYBOARD CURSOR CAPABILITY WITH A LIGHT-PEN TO PROVIDE DIRECT SINGLE ACTION PLACEMENT OF THE CURSOR.			
4. IF RECOMMENDATION NOT IMPLEMENTED TIME REQUIRED FOR PROBLEM OR ITEM INTERACTION IS LONGER WITH KEYBOARD CURSOR CONTROL THEN WITH LIGHT PEN.			
5. CONCURRENCE MANAGER <u>B M Gifford</u> TEAM LEADER <u>B M Gifford</u>			
6. DISPOSITION <input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
7. APPROVAL TECHNICAL MANAGER <u>L. O'Leary</u> DATE <u>4/22/76</u>			
7. CONTRACTOR'S IMPACT STATEMENT COST INCREASE - NO SCHEDULE IMPACT. IF COMBINED WITH S22-004P COST INCREASE MAY BE NEGATED. <u>LC Brown</u> → <u>4/22/76</u>			
8. SUPERVISOR <u>5R</u>			
APPROVAL MANAGER <u>M. Cafferty</u> DATE <u>4/22/76</u>			

SMS PROGRAM DIRECTIVE

1. INITIATOR	2. ORGANIZATION	3. DATE	4. NUMBER
C. MORTIMER	SPD	4/21/76	S22-004P
TITLE EXPANDED KEYBOARD			
2. DESCRIPTION OF PROBLEM THE ISA PANEL SELECT IS LOCATED AT 8 IS/OS LOCATIONS AS A SEPARATE ENTITY FROM THE IS/OS KEYBOARDS. APPROX 100 SWITCHES ARE REQUIRED TO MAKE UP EACH OF THE ISA CONTROL PANELS.			
3. RECOMMENDATION EXPAND THE IS/OS KEYBOARDS TO INCLUDE AN ADDITIONAL 45 FUNCTION KEYS. EACH FUNCTION KEY WOULD BE USED TO CALL UP A SEPARATE PANEL, OR A GROUP OF PANELS VIA AN INDEX. SELECTION OF THE APPROPRIATE PANEL FOR DISPLAY WOULD BE VIA DISCRETE CURSOR CONTROL. THIS RECOMMENDATION IS OPTIMISED BY ALSO PICKING UP THE LIGHT-PEN RECOMMENDATION.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED METHOD OF SELECTING PANEL DISPLAYS, SYSTEMS STATUS DISPLAYS ETC. WILL BE MORE CUMBERSOME WITH ISA HARDWARE PANELS THAN WITH THE FUNCTION KEYS.			
5. CONCURRENCE			
APPROVED BY B.M. Gifford		TEAM LEADER B.M. Gifford	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS			
APPROVAL			
TECHNICAL MANAGER L. Clackey		DATE 4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT NO SCHEDULE IMPACT, POSSIBLE COST SAVINGS. L. Brown 4/22/76			
8. ACTION			
5R			
APPROVAL		DATE	
M. C. Coffey		4/22/76	

SMS PROGRAM DIRECTIVE

B. M. GIFFORD

NASA

4/21/76

N22-008P

BACK UP COMM OMISSION AT IOS

NO CONTROLS EXIST AT IOS'S FOR BACK UP COMM LOOPS
 NO JACKS EXIST AT IOS'S FOR BACK UP COMM LOOPS

5. RECOMMENDATION:

ADD CONTROLS AT IOS'S
 ADD JACKS AT IOS'S

6. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED:

BACK UP COMM WILL BE UNUSABLE

9. CONCURRENCE

APPROVED BY:

B.M. Gifford

TEAM LEADER:

B.M. Gifford

6. DISPOSITION

☐

Approved

☐

Disapproved

☐

Withdrawn

☐

Tech. Direction

☒

Contractor's Impact Statement Req.

APPROVAL

TECHNICAL MANAGER

A. Clark

DATE

4/22/76

7. CONTRACTOR'S IMPACT STATEMENT:

NO COST OR SCHEDULE IMPACT. INVESTIGATION WAS UNDER WAY
 AS PART OF COMM DESIGN.

LBrown 4/22/76

8. SCA ACTION:

57

APPROVAL

TECHNICAL MANAGER

McClarty

DATE

4/22/76

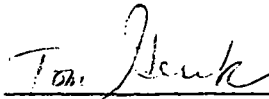
SMS PROGRAM DIRECTIVE

1. INITIATOR R. L. MYERS	ORGANIZATION JSC	DATE 4/21/76	NO. N22-006P
2. DESCRIPTION OF PROBLEM ADDITIONAL INDICATOR LIGHTS ON MBIS & FBIS			
3. RECOMMENDATIONS THERE IS NO IMMEDIATE INDICATION OF ABORT, RECORD IN PROGRESS, OR MASTER ALARM ON THE IS.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED ADD "ABORT", "MASTER ALARM" AND "RECORD IN PROGRESS" LIGHTS ON PANELS 3C, 3F, 12C and 12F.			
5. CONCURRENCE			
APPROVED BY B M Gaff		TEAM LEADER B M Gaff	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS			
APPROVAL			
TECHNICAL MANAGER L. Mackey		DATE 4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT NO COST OR SCHEDULE IMPACT.			
LeBrow 4/22/76			
8. SCP ACTION			
57			
APPROVAL			
SCP OFFICER McCauley		DATE 4/22/76	

FORWARD CREW STATION

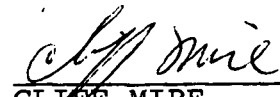
PRELIMINARY DESIGN
REVIEW MINUTES

APPROVAL



TOM GEREK
SECTION CHIEF

APPROVAL



CLIFF MIRE
WORK PACKAGE MANAGER

C/S PDR-

Attendees

C. Mire	Bruce Stark
A. Ulangca	Charles Olasky
T. Gerek	Bert Gifford
K. Hickling	John Donnellon
R. Meyers	

Tom Gerek handed out Attachment 1 - updated forward panel configuration and Attachment 2 - updated forward component identification to reflect Revision C of panel layouts received at Rockwell 4/6 & 7. PDR for the Aft Station of FBCS is tentatively scheduled for June 11, 1976.

SPD stated that the following:

- 1) Forward structure
- 2) Overhead structure
- 3) Eyebrow structure

Designs have changed such that the MBCS structures require redesign - the forward structure can be reworked - However items 2 and 3 can not be reworked and require refabrication.

- 4) Most Flags on MBCS are not reusable - 3 position presently vs 2 positions on OAS.

SPD presented RID's S20-001P, 002P, 003P, 004P to NASA - (Attachment 7, 8, 9, 10).

SPD stated that the SMS instruments would

- 1) Be provided with Mil Spec. lighting.
- 2) Not have shatter shields

Discussion on the Rotational Hand Controller mounting structure led to the conclusion that SPD presently had adequate data in this area (OV101 data).

SPD stated that the Rudder Pedals would be the same as 101.

SPD stated that the Speed Brake/Thrust Controller for SMS would be same as OAS (101).

SPD presented a layout of the FBCS Crew Station/Platform. SPD stated that a 16 ft. corridor could be allowed for insertion of a mid deck structure by NASA. The height of the complex, including visual estimate, comes within 3 feet of the ceiling.

Action SPD - To firm up the estimate for the Aft Visual Structure size by July 1, 1976.

During discussion on entrance methods into the C/S SPD stated that if the mid deck is installed, the top of the mid deck mockup ladder would not reach the floor of the flight deck C/S due to platform floor thickness. The mid deck ladder would need to be made longer (taller) than normal. Discussion ensued on number of ladders providing entrance to the Crew Station - NASA wrote RID N20-001P (Attachment 5) to request 2 ladders.

The CEI spec was reviewed - NASA requested

- 1) A statement that the FBCS mod kit would be added at a later date.
- 2) Annotate the appendix as to FBCS or MBCS.
- 3) Add statements as to differences between FBCS, FBCS mod kit or MBCS mod kit.
- 4) Add statements as to FBCS structure.

NASA wrote RID N20-002P (Attachment 6) on CEI spec for C/S. In general NASA requested more detail in the CEI specs. Discussion ensued on the CEI format. This will be discussed during the program review. NASA is concerned that the CEI formats do not presently allow the individual CEI's to be combined into one total document.

Discussion ensued on the status of the GFE dates.

NASA requested SPD to provide on the form of Attachment 3 the following info for Panels, Assembly drawings, and Structure drawings. (Attachment 3 covers the forward station, only at this time).

- 1) Which items does the Rockwell schedule depict release dates for VO type drawings prior to the GFE data of 6/26.
- 2) Which items does the Rockwell schedule depict availability dates for VL type drawings prior to the GFE date of 6/26.
- 3) Which items does the Rockwell schedule depict VO or VL drawings subsequent to the GFE date of 6/26.

It was noted that for all items which fall into category 3, NASA and SPD would make assumptions prior to 6/26 to allow SPD effort to proceed. A working meeting with NASA will be held during the week of June 21, 1976 to finalize these assumptions.

NASA requested comparable information on Spec Control drawings except the GFE data delivery date is 5/26. A working meeting with NASA will be held on or before 5/26, at Houston, to finalize assumptions in this area.

This information is enclosed as Attachment 13.

NASA wrote RID on Panel #019 Definition. (Attachment 14).

SPD notified NASA that the HSI Faceplate Bezel has changed - a RID has been submitted to NASA on OAS and has not been dispositioned.

SPD submitted RID's on HSI configuration changes and shatter shields (Attachment 11 & 12).

SPD stated that a component listing (partial) was received from Rockwell 4/19/76 and will be compared with the PDR documentation. The partial Rockwell list will be used to update the documentation in areas where applicable, SPD may still have quantity discrepancies due to drawing layout interpretation and the partial component listing being incomplete. NASA stated that Attachment 3 should be filled out by SPD to indicate on a panel or a component basis whether SPD plans on utilizing released drawings or specs, layout drawings, preliminary specs or undimensional layouts. (Based on Rockwell schedule received 4/6/76.)

Attachment 4 was presented by A. Ulangca.

SPD stated that the panel fastener would not be real-world due to cost considerations. TRIDAIR used in vehicle - SPD suggests use of captive screws. (Ref. OAS.)

Discussion on secondary structure led to NASA giving SPD permission to assume the glareshield will be same as 101. Discussion on the GFE seats led to NASA giving SPD permission to assume the GFE F12 seats would mount and interface with the SPD structure the same as OAS seats.

SPD Action - Abstract from Attachment 3 the areas where there is indication that NO VO's or VL's are planned to be available prior to 6/26/76 and concentrate on working with Rockwell to obtain data or pieces of data which will help support SPD design or assumptions needed to enable Singer to "move-out" on 6/26/76.

47-201000-7

The following forward panels were changed by Revision C
of VL70-730102.

C2

C3

F7

~~B3~~

~~B3~~

L1

L2

L4

02

06

08

09

013

014

015

016

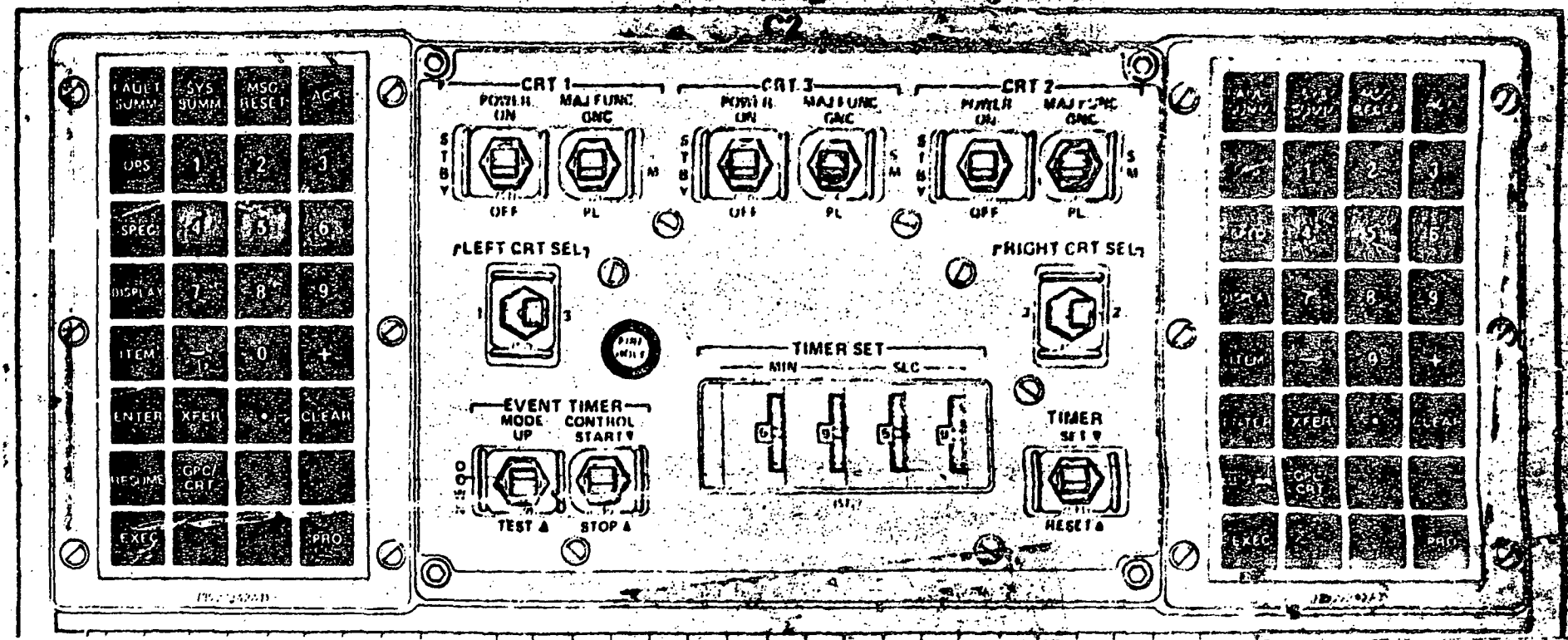
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019

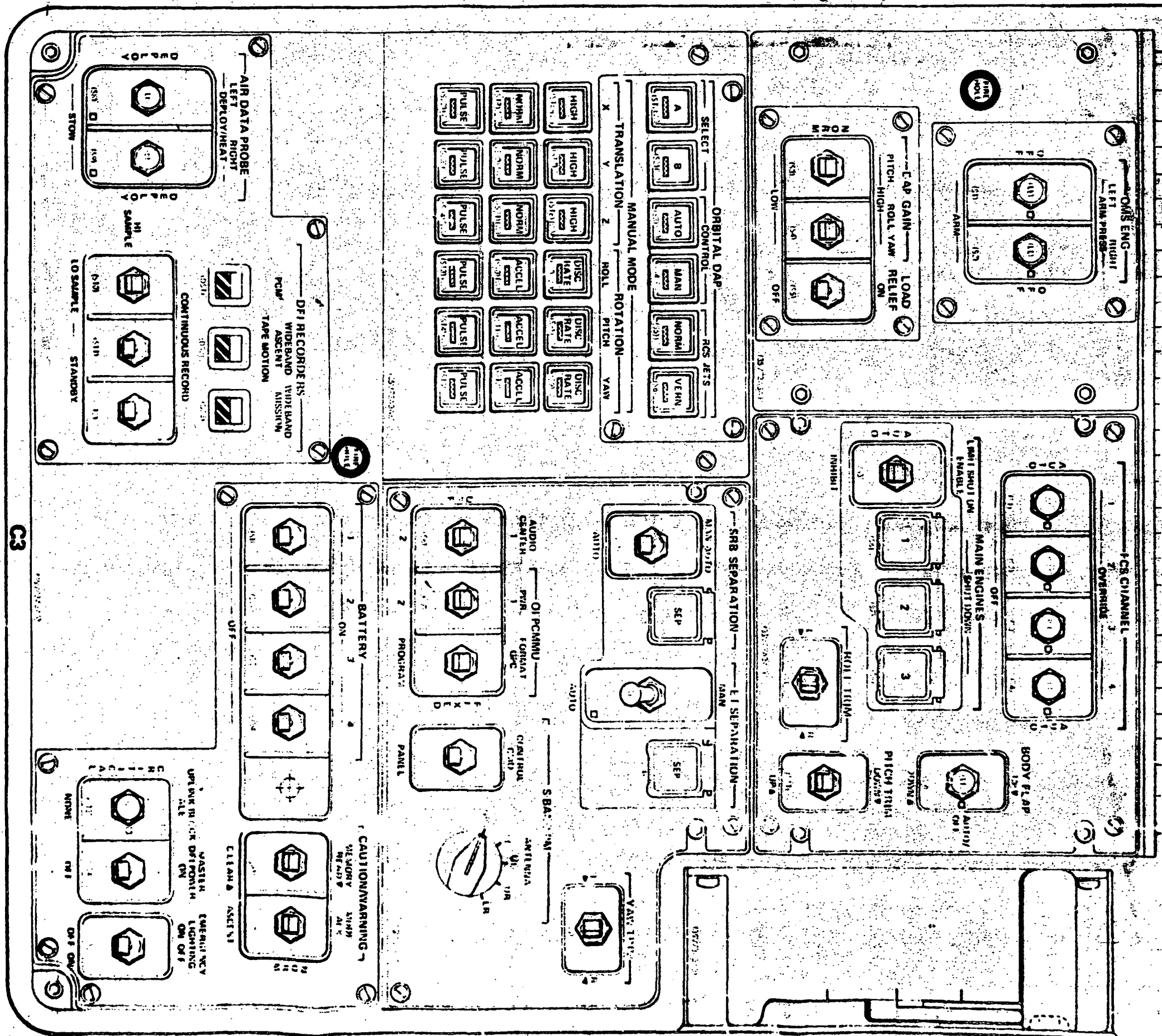
R1A1

R2

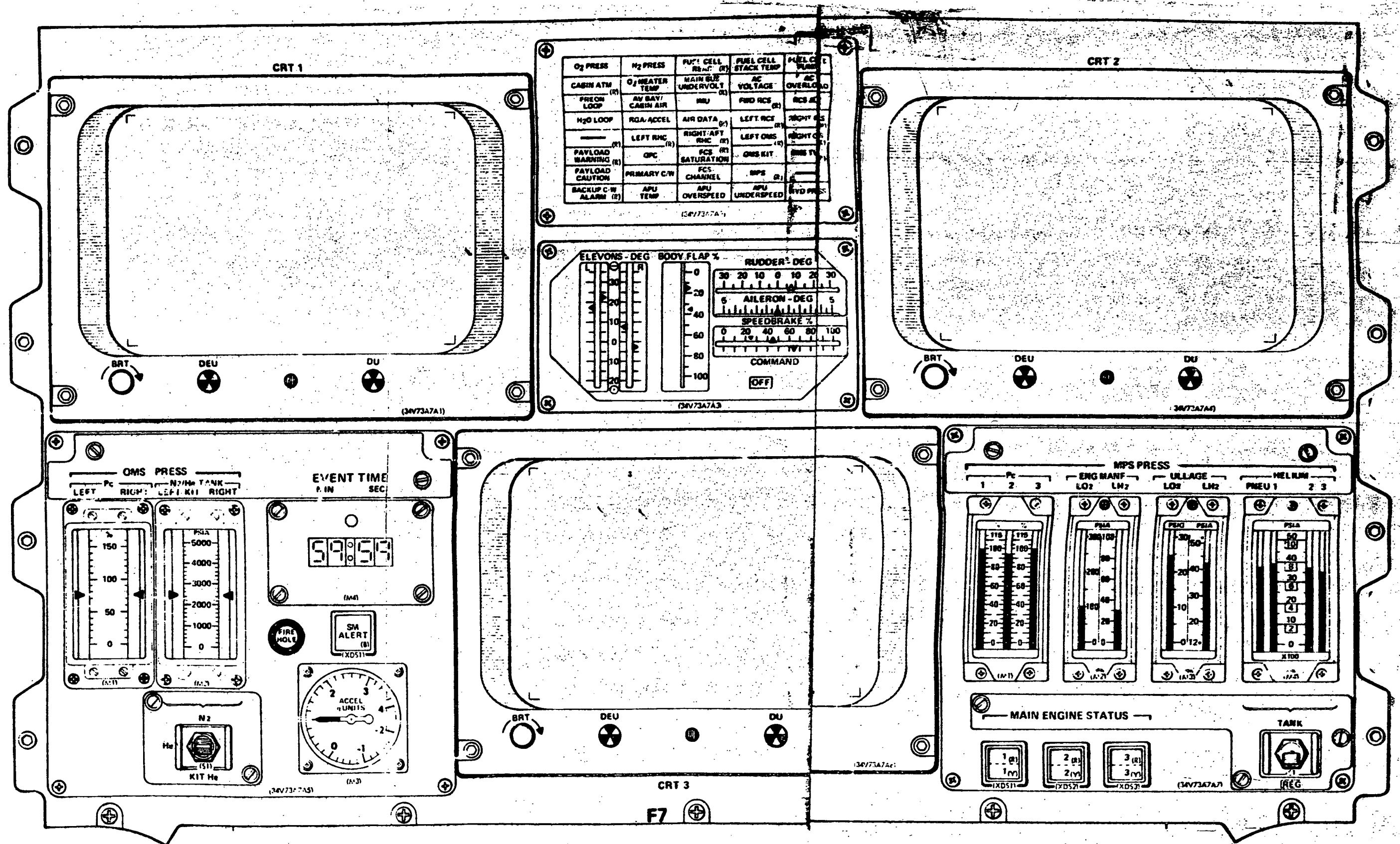
R4



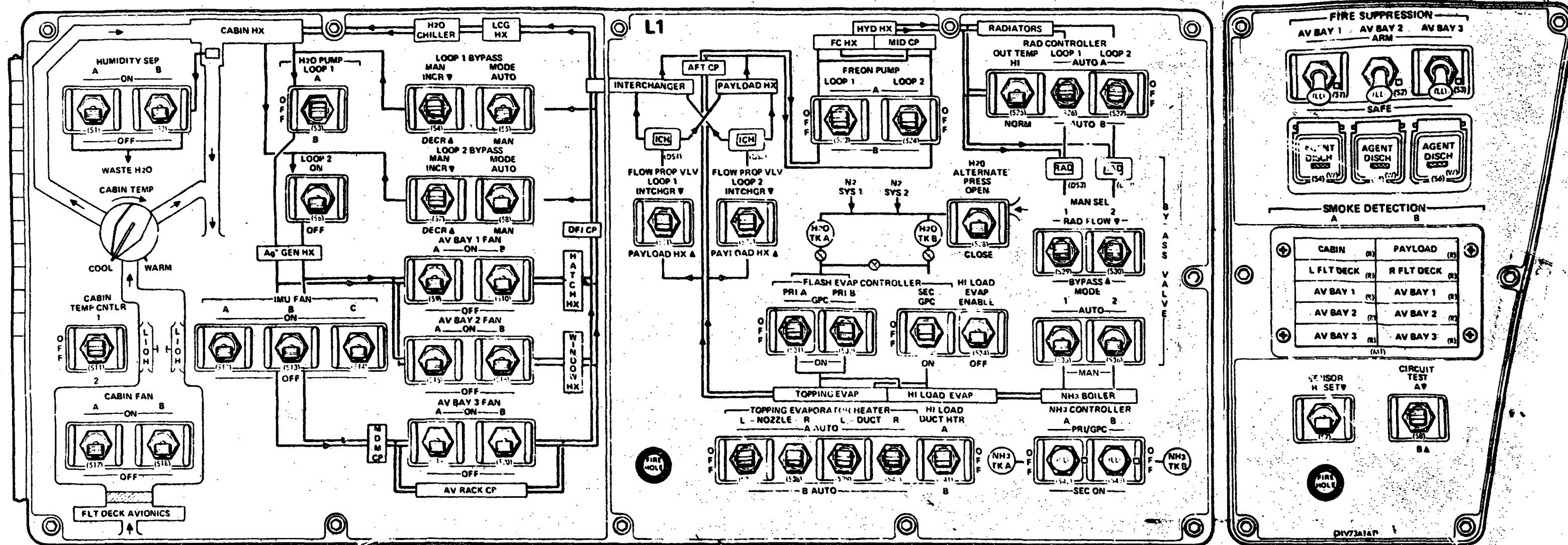
PANEL C2



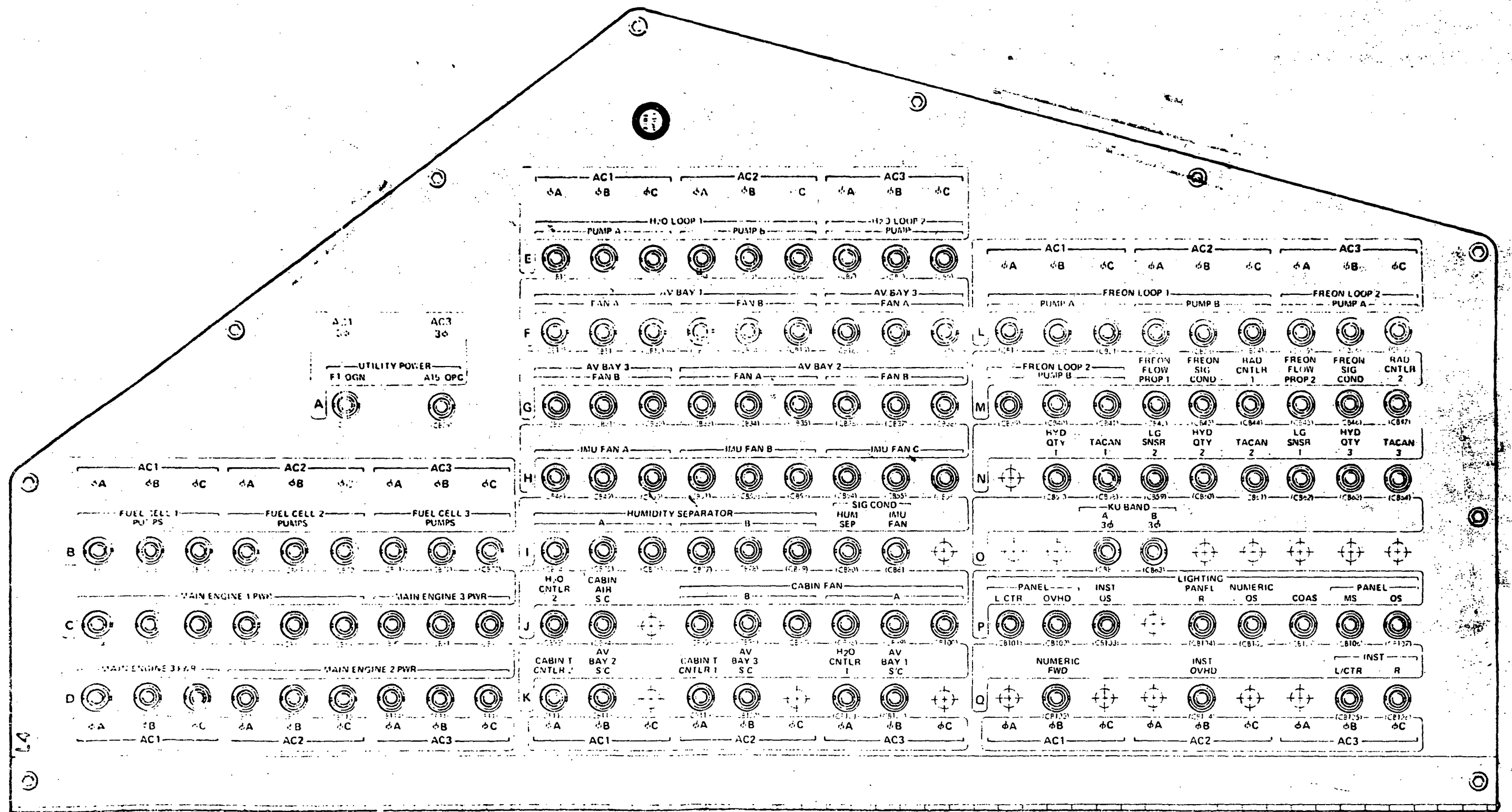
PNL C3



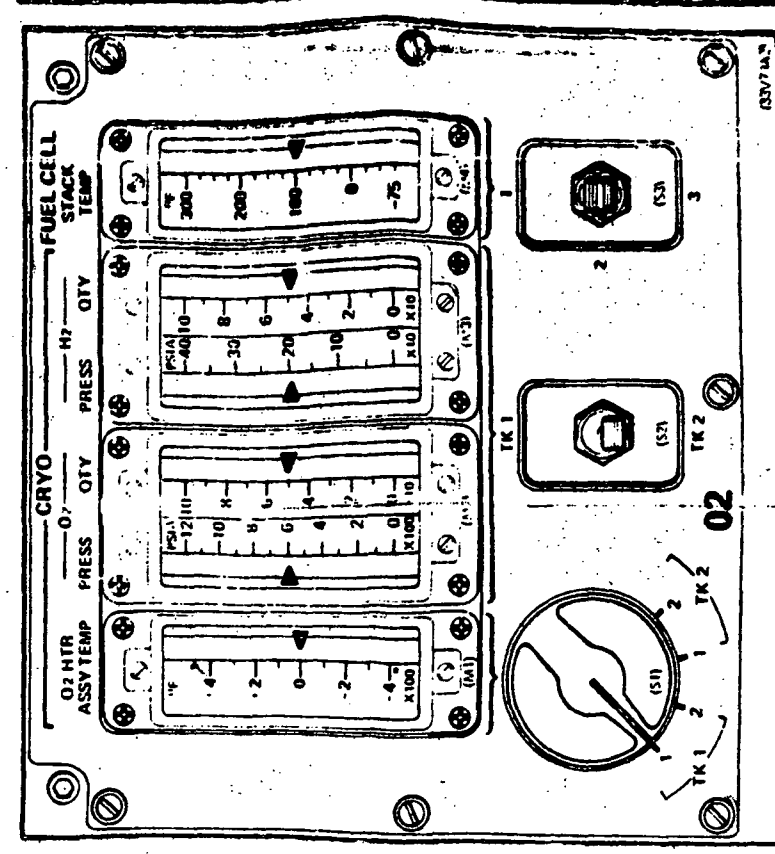
PNL F7



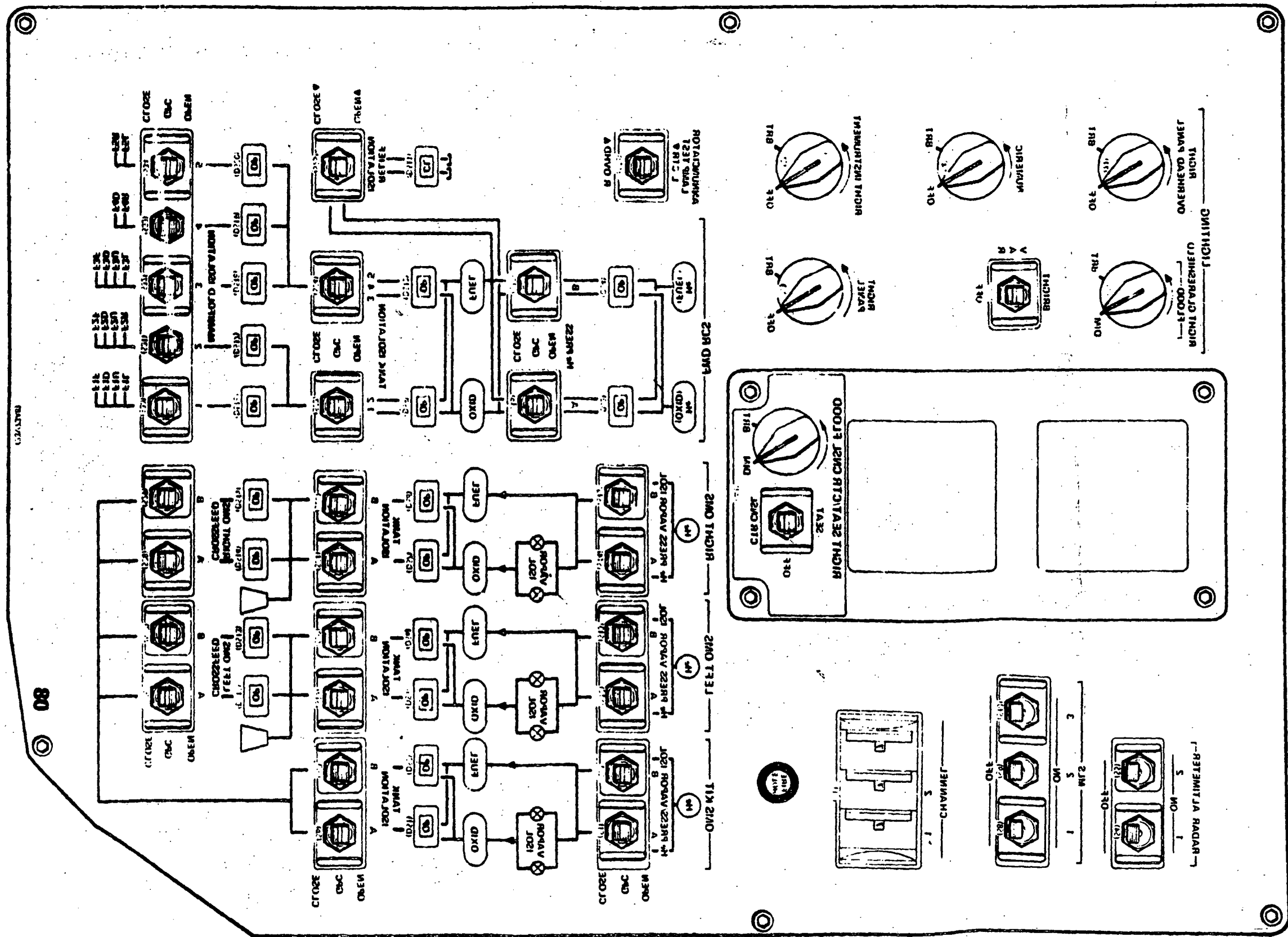
PNL L1



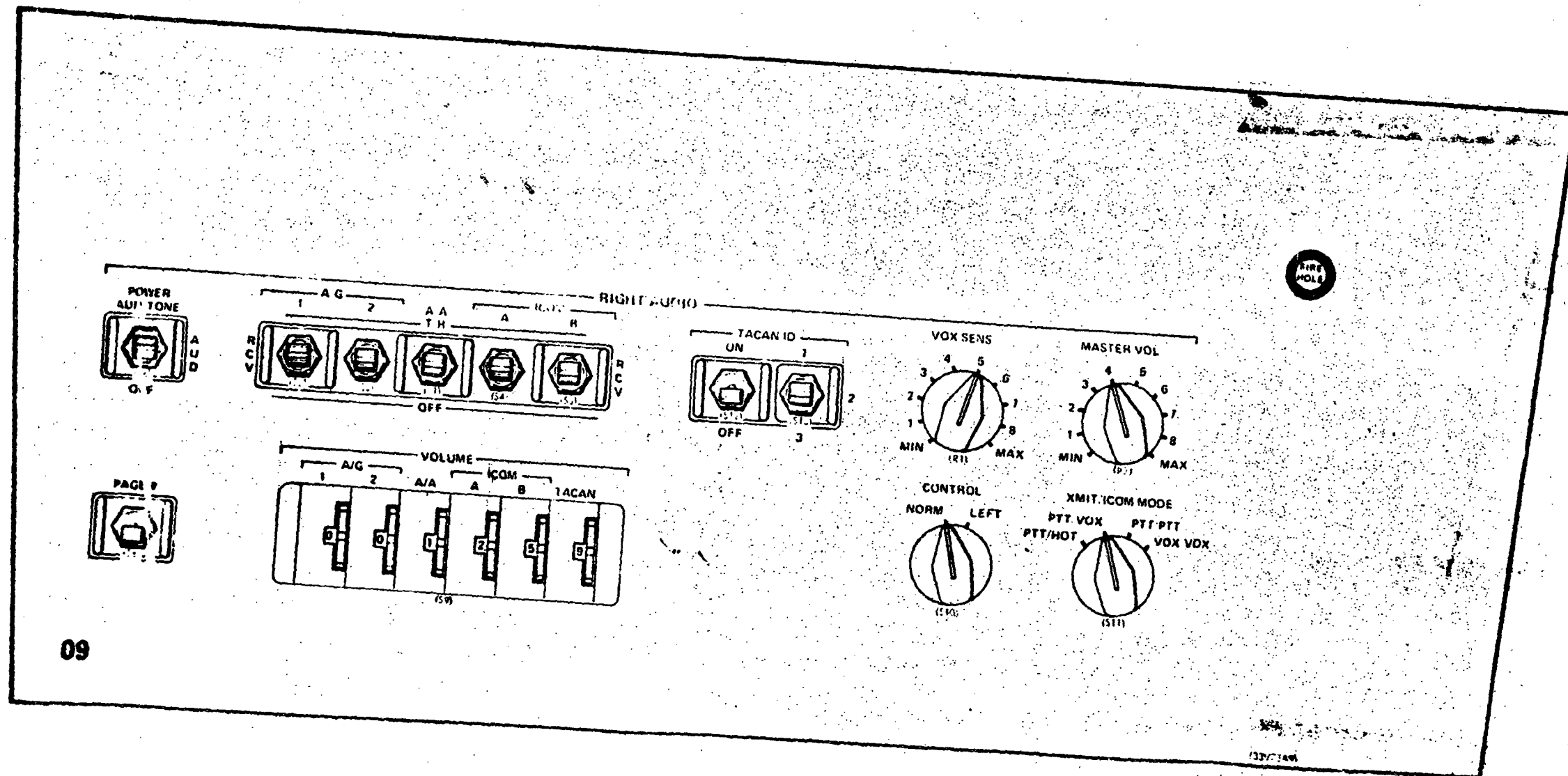
PANEL L4



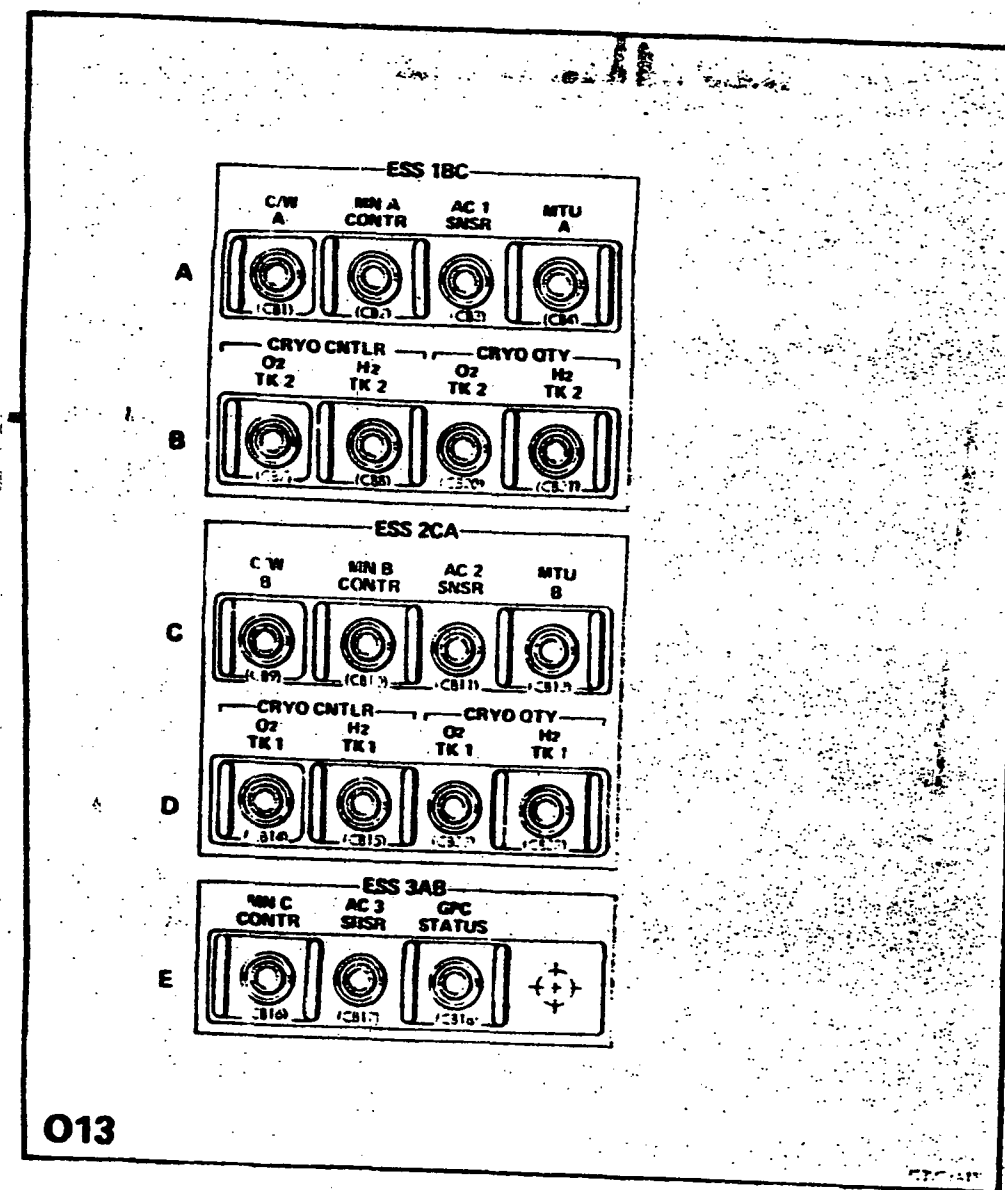
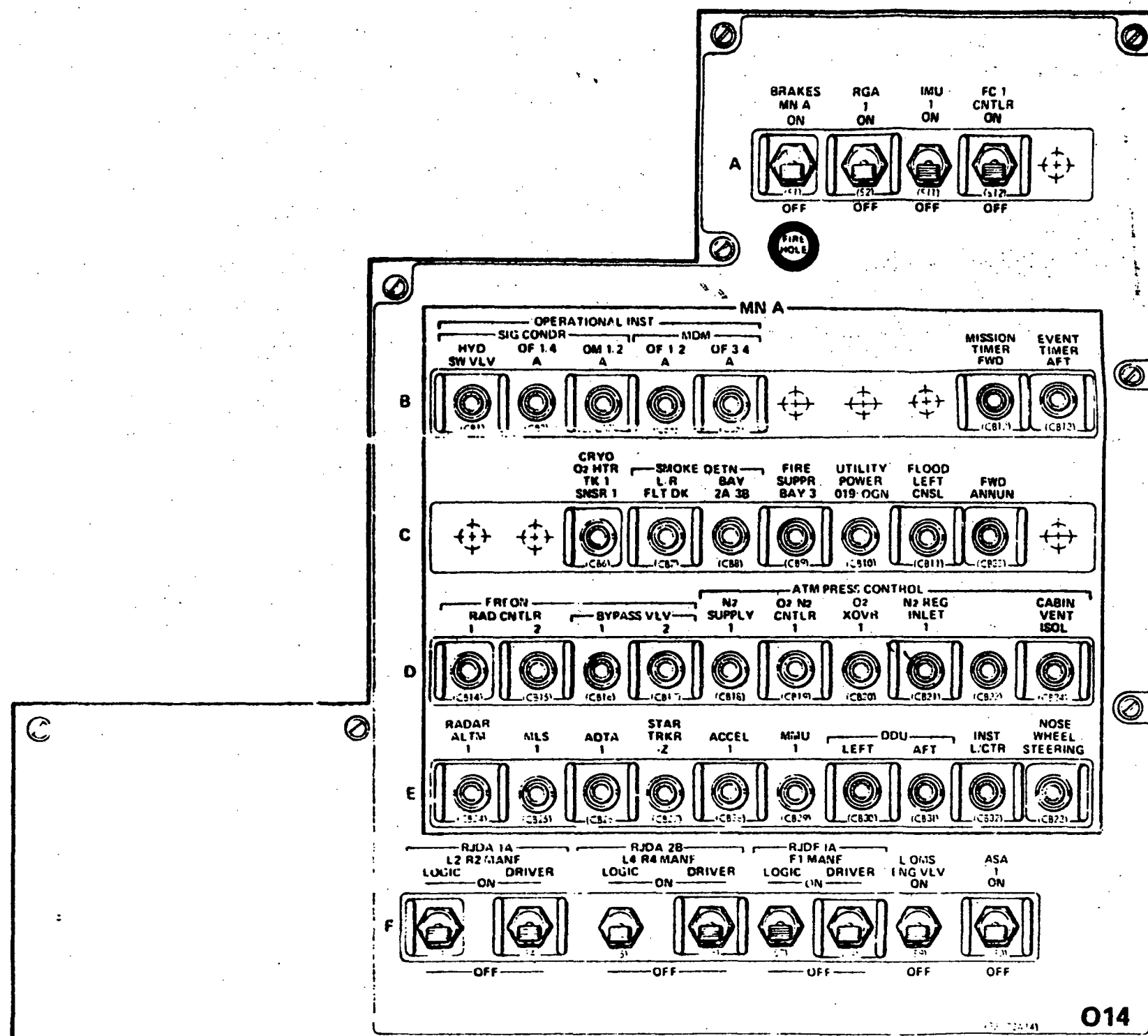
PNL 02



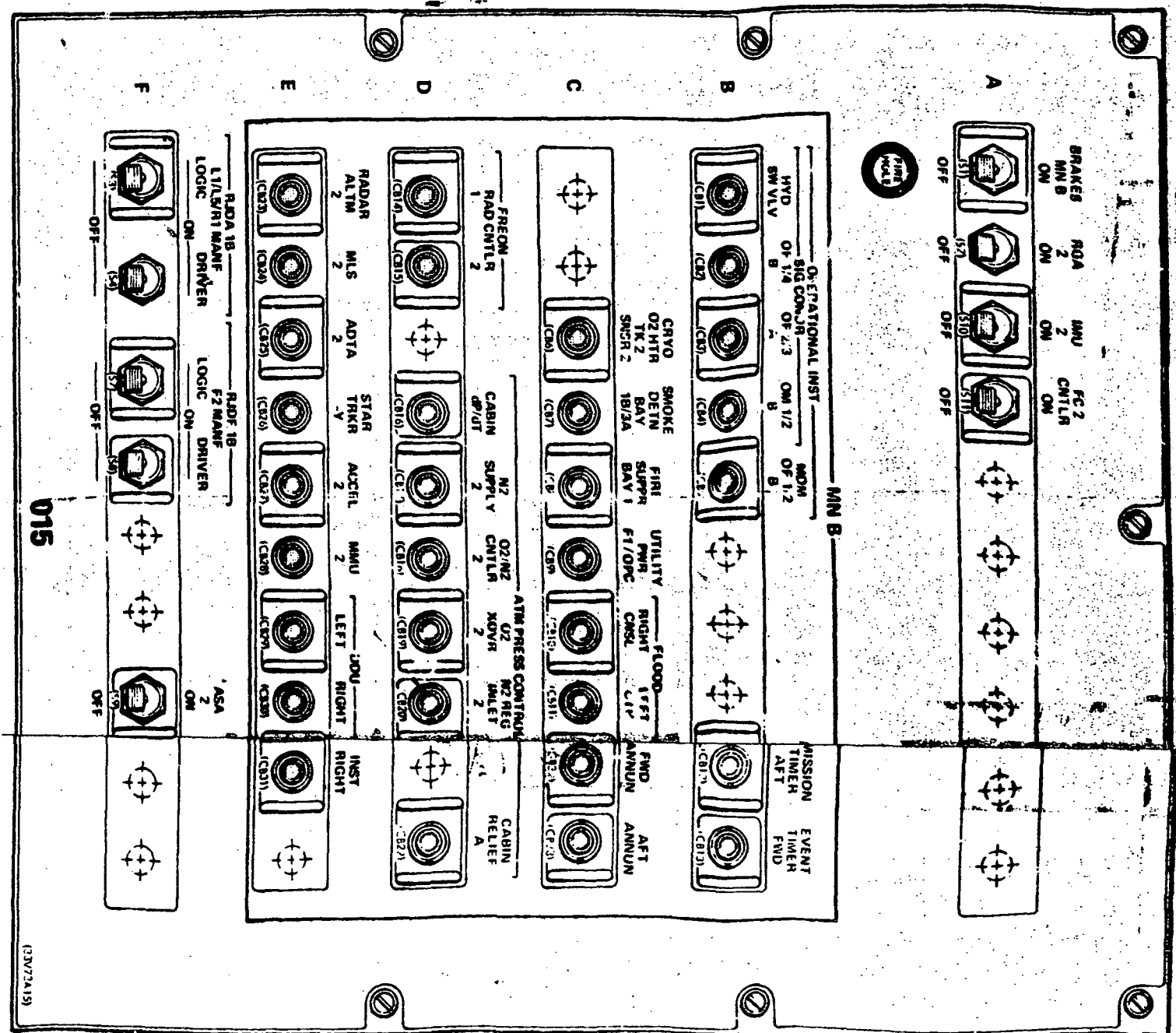
PANEL 08



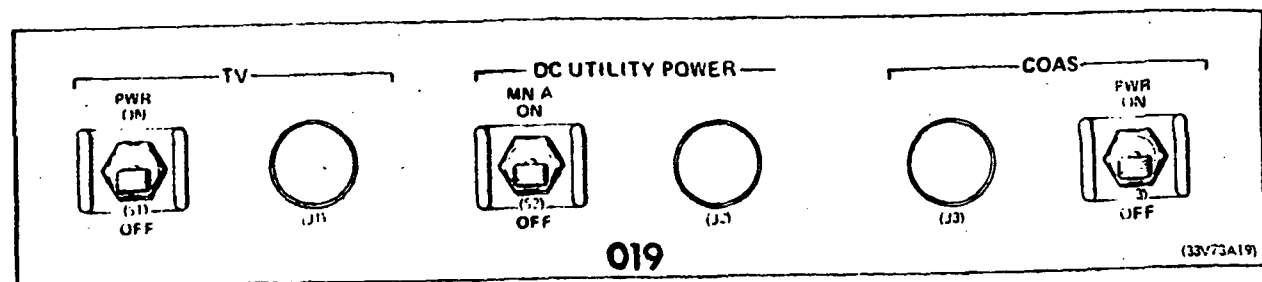
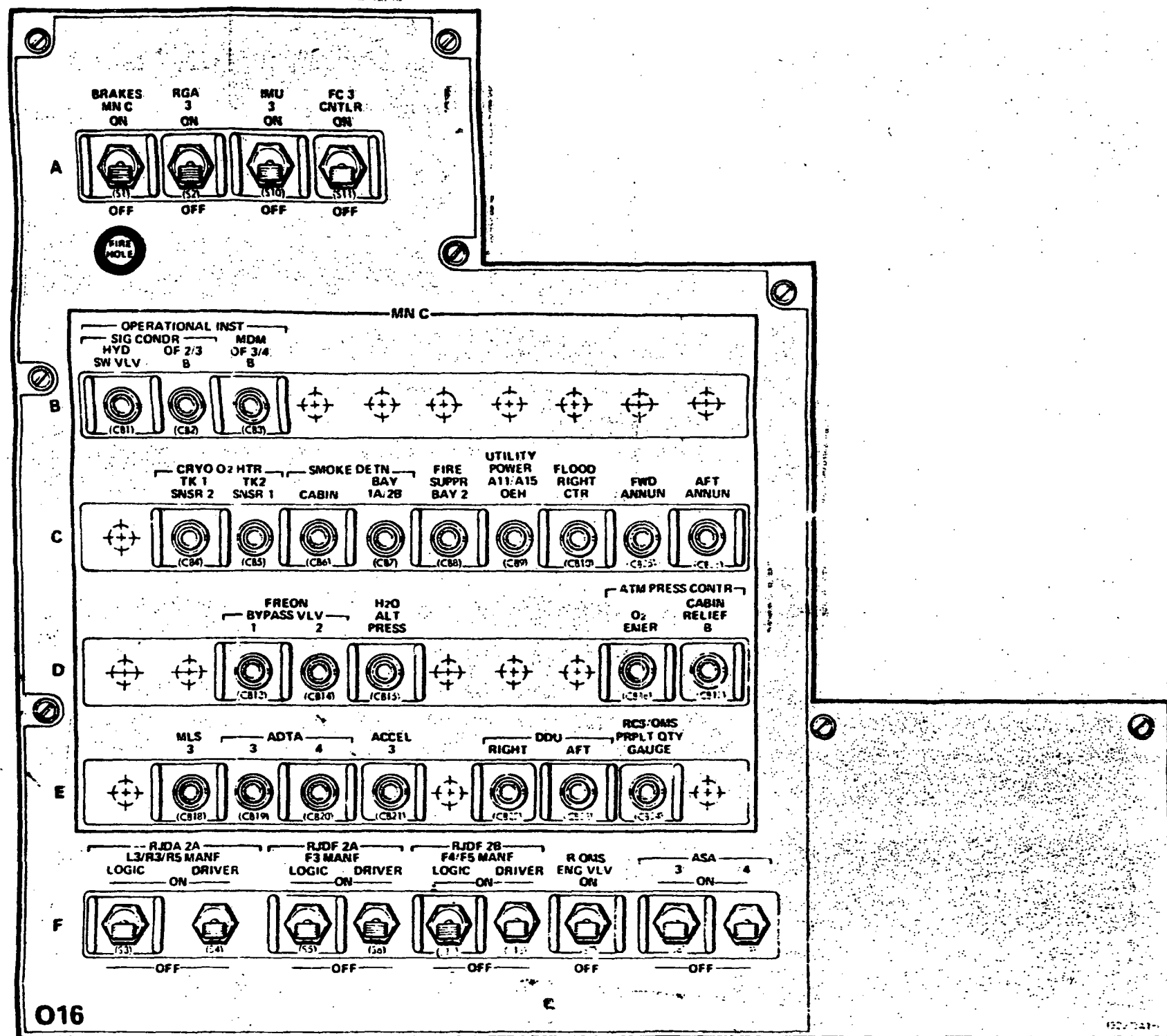
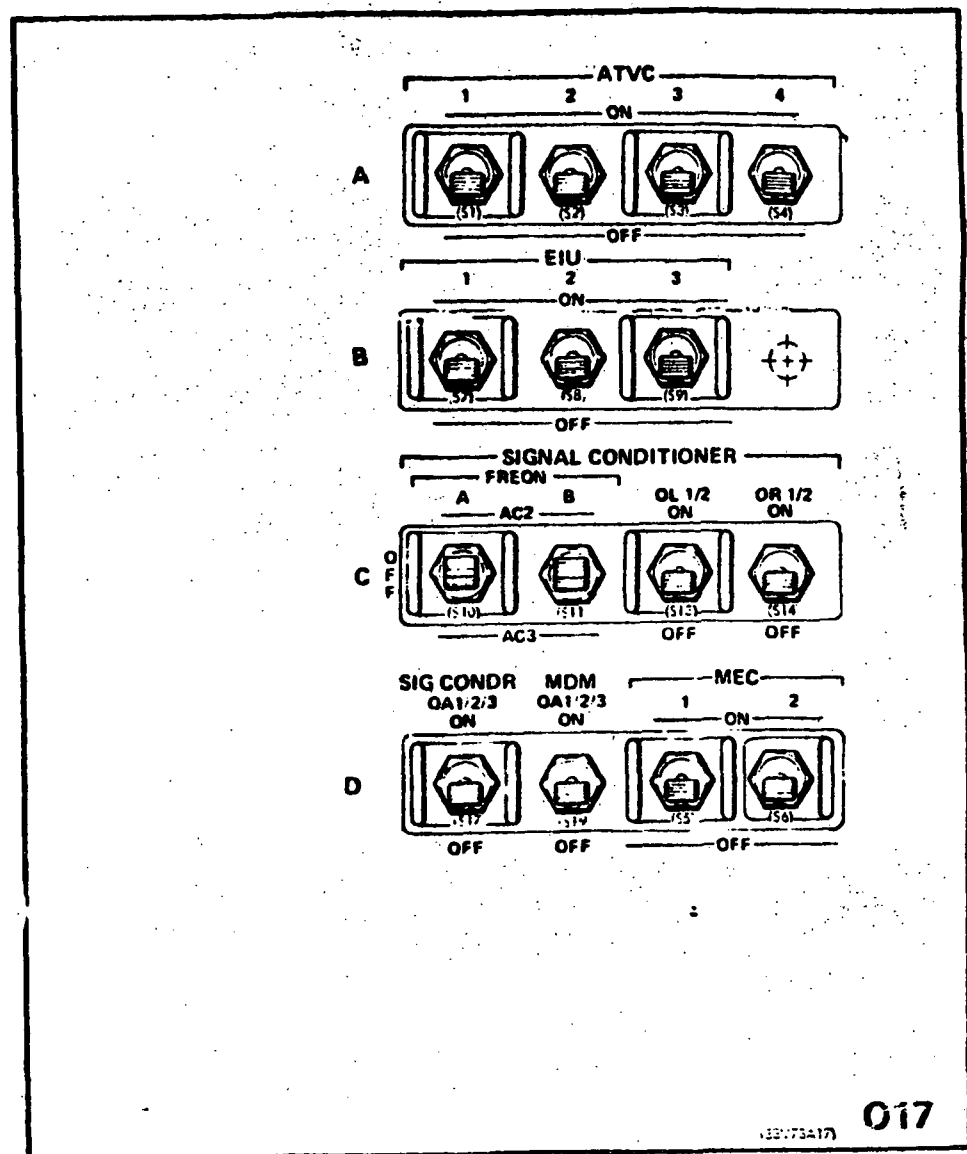
PANEL 09



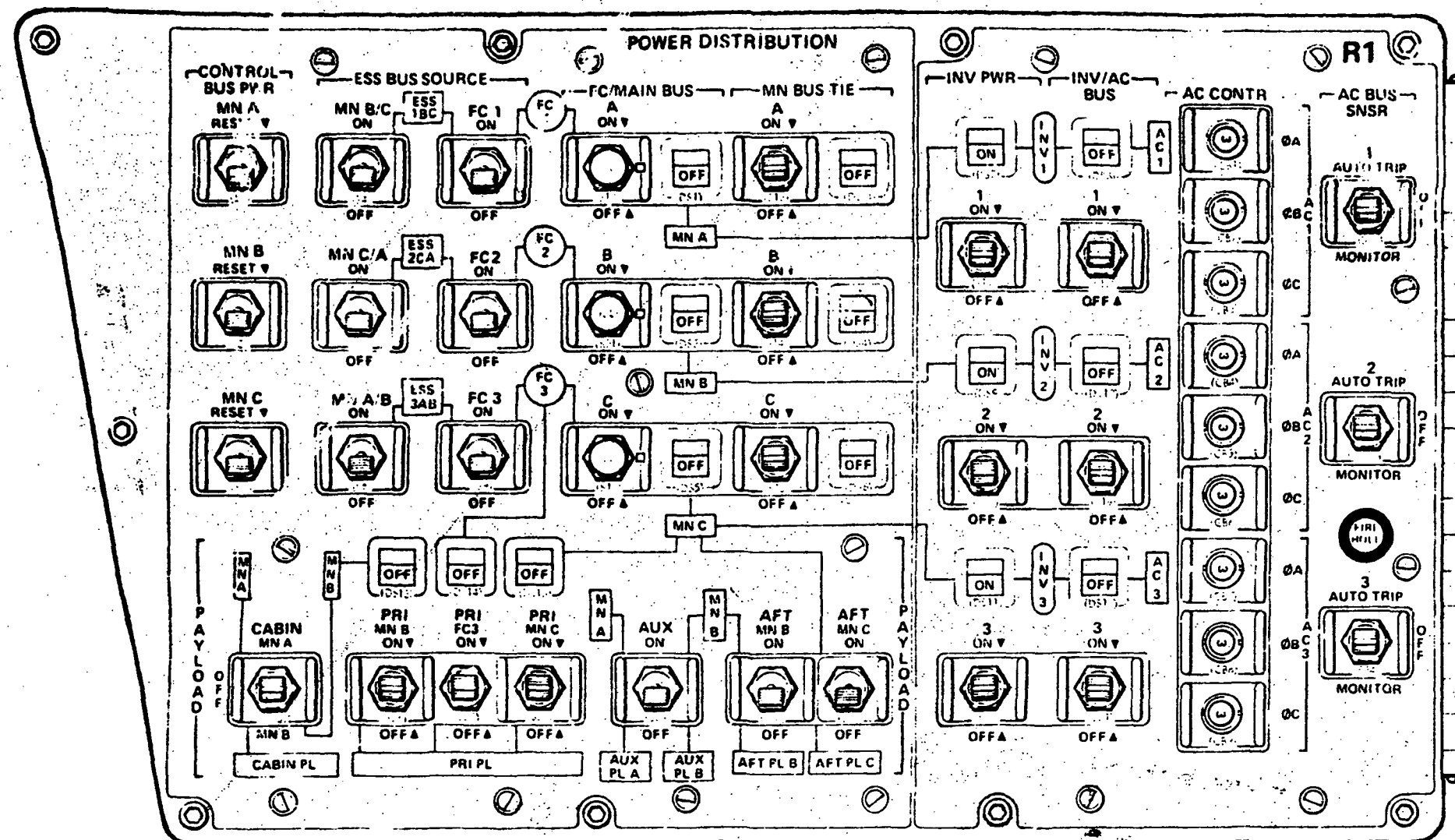
PANEL 013
014



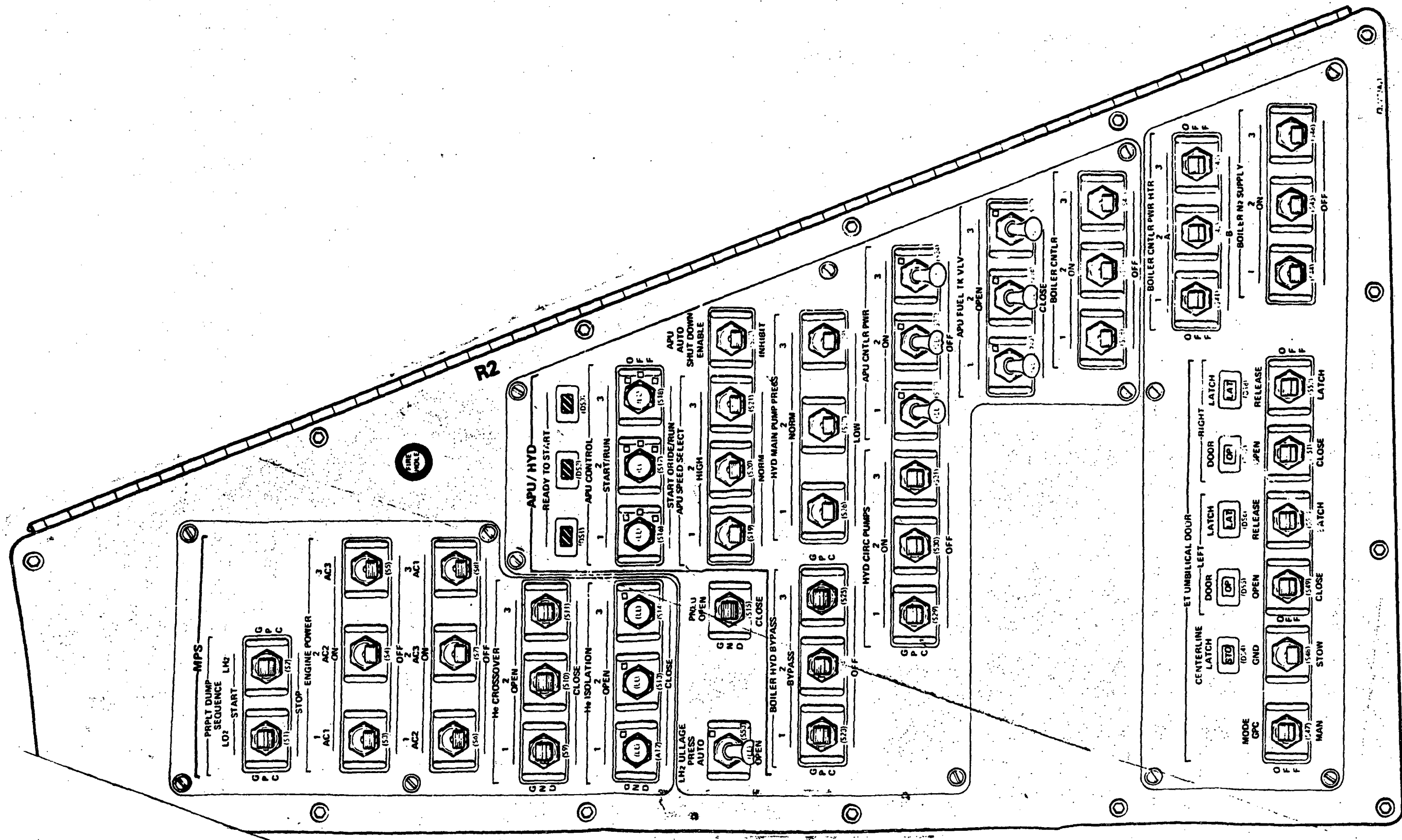
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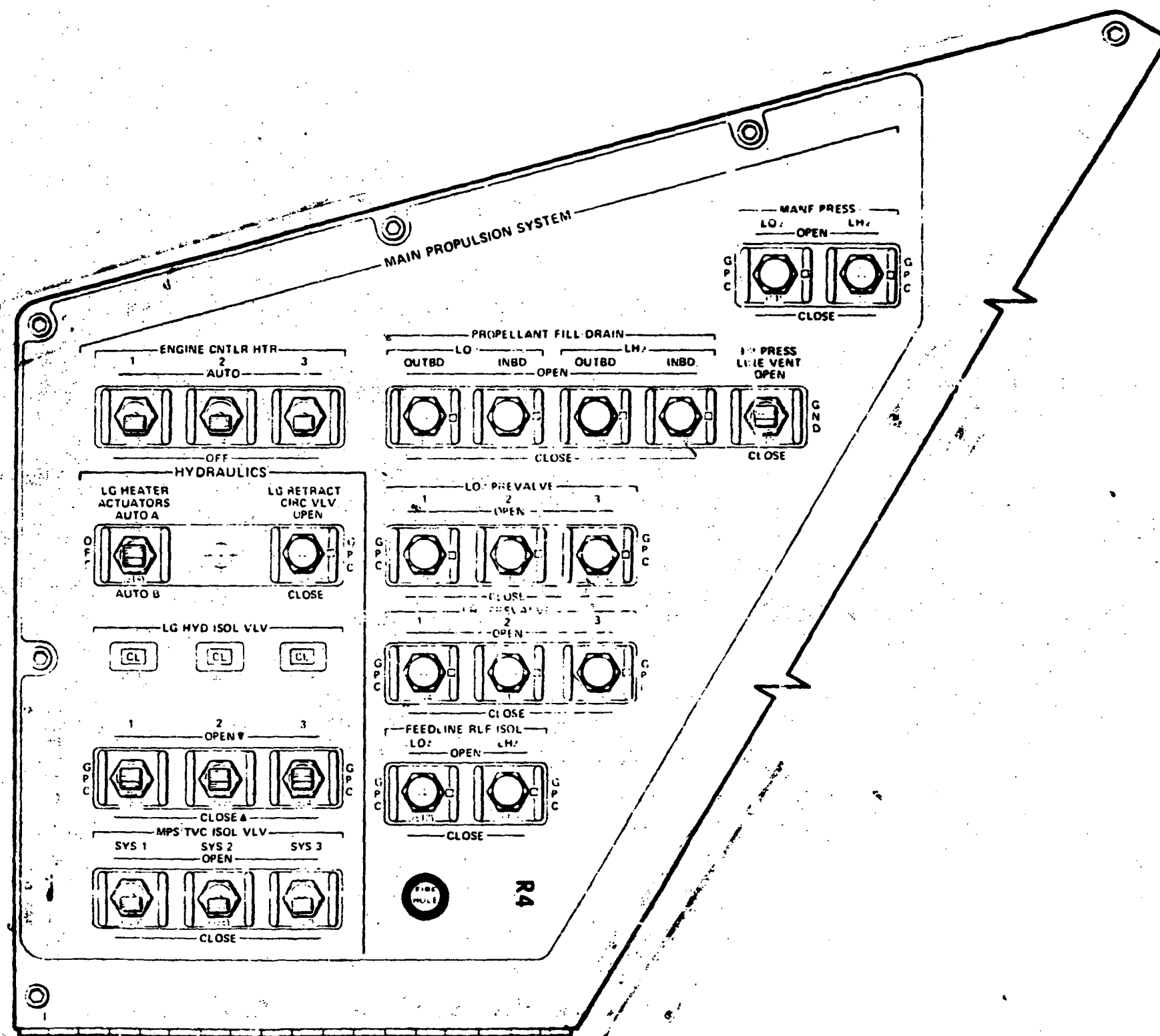
PANEL 016
017
019



PANEL R1



PANEL R2



PANEL R4

SWITCH LISTINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN-CLATURE	CHANNEL SPEC NO	GORZ LOC. SPR PART NO	SEE SKETCH	NO PT AT THIS POSITION	COMMENTS DESCRIPTION
<u>FCS CHANNEL</u>							
51 1	12	OVERRIDE OFF	⊕-635			# AUTO	ON-OFF-ON
52 2	12	OVERRIDE OFF				# AUTO	
53 3	12	OVERRIDE OFF				# AUTO	
54 4	12	OVERRIDE OFF				# AUTO	
<u>MAIN ENGINES</u>							
55 LIMIT SHUT DN	3	ENABLE INHIBIT	⊕-6103	1003370-01		AUTO	ON-OFF-ON
59 BODY FLAP	9	* UP * DOWN	⊕-			* AUTO/OFF	* ON-OFF-ON
510 ROLL TRIM	4	* L * R	⊕-6105	1003370-04		(N)	* ON-OFF-ON
511 PITCH TRIM	4	* DOWN * UP				(N)	
517 MAIN ENGINES SHUT DOWN	PUSH-BUTTON						
518 1							
519 3							

= LOCKED POSITION ⊕ = ME452-0102

* = MOM
CNJ = NO. POSITION

REV A - 57856 INTERCHANGED

REF.	ENG. NO.	REV.	PAGE	DATE	ENG.	APPR.	REL. DATE	TITLE
35 70-730102	2	2	3	4/15/76	TRAWBANK		3/26/76	PANEL
35 173 A3A7	12-12-75	B					ENG. TRAWBANK	C3A2
C3A2		C						1 OF 1

SWITCH LISTINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN-CLATURE	CHANNEL SPEC NO	CORE LOC. SPD PART NO	SEE SKETCH	NO DS AT THIS POSITION	COMMENTS DESCRIPTION
BATTERY							
1	1	ON	6101	1003370-02			ON-ON
2	1	OFF					
3	1	ON					
4	1	OFF					
CAUTION/ WARNING							
MEMORY	4	* READ	6105	1003370-04		[N]	* ON-OFF-ON
MODE	3	* CLEAR					
AIR DATA PROBE		ACK	6103	1003370-01		NORM	
LEFT	11	ASCENT					
RIGHT	11	DEPLOY HEAT				DEPLOY	ON-OFF-ON
UPLINK BLOCK	LIFT LOCK TYPE 12	# STOW				DEPLOY	
MASTER DFI POWER		DEPLOY HEAT					
EMERGENCY LIGHTING		# STOW				CRITICAL	ON-OFF-ON
		ALL					
		NONE					
		ON	6101	1003370-02			ON-ON
		OFF					
		ON/OFF					
		OFF/ON					

* = MOM

[N] = Null Position

= Locked Position REV(A) - ADDED S15 & SW NO'S

REF.	DWG. NO.	REV.	PAGE	DATE	ENG.	APPR.	REL. DATE	TITLE
V670-730101	7	2	2	4/15/76	MW		3/26/76	PANEL
35U73A3AS	1242-75						ENG. MW	C3AS
							APPR.	

④ = ME 458 - 0102

REV(A) - ADDED: SW NO'S

703

SWITCH LISTINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN- CLATURE	CHANNEL SPEC NO	CORE LOG- SPD PART NO	SEE SKETCH	NO DI AT THIS POSITION	COMMENTS DESCRIPTION
SRB SEPARATION	1	MAN AUTO AUTO	6-6101	1003370-02			ON - ON
ET SEPARATION	10	MAN # AUTO	6-6252				# ON - ON
YAW TRIM	4	* L * R	6-6105	1003370-04		(N)	* V - OFF - ON
AUDIO CENTER	3	1 2	6-6103	1003370-01		(N)	ON - OFF - ON
OLPCMMV PWR	3	1 2				(N)	
FORMAT	3	GFC PROGRAM				FIXED	
S-BAND FM CONTROL	1	CMD FORMAT PANEL	6-6101	1003370-02			ON - ON
SRB SEPARATION	PUSH BUTTON		ME 452-0061				
SEP							
ET SEPARATION							
SEP							

H = LOCKED POSITION ME 452-0102
X = MOM
END = NULL

REV(A) - 59 NOMENCLATURE

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102		2	2	A	4/15/76	mmw/bm		3/24/76	PANEL
35073A3A7				B				mmw/bm	C3A7
				C					

TYPE OF EQUIPMENT	NAME	DISPOSITION	COMMENTS
INSTRUMENT (201)	MPS PRESSURE PC M1	MC432-0832	PC 1, 2 & 3 (REV A)
	ENG MANF M2	-	40 & 4 H2 CHANGED FROM X10 SCALE TO FULL SCALE
	VLLAGE M3	-	LO2 & 4 H2
	HELIUM M4	-	PNEU, 1, 2 & 3
ANNUNCIATOR	MAIN ENGINE STATUS XDS2	MC434-0075	DOUBLE LENSE
"	+ XDS2	-	DOUBLE LENSE
" (FAS)	3 XDS3	-	DOUBLE LENSE
" (FAS)	SM ALERT XDS1	ME452-0061 - 1144	SINGLE LENSE
READOUT	EVENT TIME M4	MC456-0053 -0001	(REV A)
INSTRUMENT	OMS PRESS PC	MC432-0232	2-LEFT & RIGHT SCALE CHANGED FROM 200 PSIA TO 150% N2 He TANK - LEFT/RIGHT
" (FAS)	N2 He TANK M2	-	

REV A - XDS1-XDS2 INTERCHANGED

REF. DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
12-70-730102-1	A	4/15/76	mmw	mmw	mmw	mmw	mmw	PANEL F7
			B					
			C					

TYPE OF EQUIPMENT	NAME	DISPOSITION SPEC. NO.	SPD PIN	COMMENTS
INSTRUMENT (7A0)	ACCELEROMETER M3	MC432-0219	LP 205 8917	ACCEL & UNITS RECEIVED
" (7A0)	SPI	MC432-0221	LP 205 8905-01	ELEVONS, BODY FLAP RUDDER, AILERON, B-1000 B-1000 SOME LEGENDS CHANGED TO RIGHT-LABELED MATRIX
ANNUNCIATOR (7A2)	CAUTION & WARNING	MC434-0069		
DU 1 (7A1)	CRT 1 DISPLAY UNIT	MC615-0006		GFE
DU 2 (7A4)	CRT 2 DISPLAY UNIT			GFE
DU 3 (7A6)	CRT 3 DISPLAY UNIT			GFE

REV A - LEGENDS ADDED & CHANGED C & W

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
	VL 70-730102-1	A			4/15/76	Murphy		3/29/76	PANEL F7
		B							
		C							

[illegible]

REV A SCALING CHANGED M4

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
	1270-730102-7			A	4/15/76	W. W. W. W.		3/29/76	PANEL F8
				B					
				C					

TYPE OF EQUIPMENT	NAME	SIGNAL STRENGTH	DISPOSITION SPEC. NO.	DD PIN	COMMENTS
SWITCH-	LESS 1BC	↑	ME 452 - 0093-5025	1003312-03	2 POLE, 9 POS.
ROTARY	2CA				S2
	3AB				
	- MAIN A				
	B	SAME 9 POS SW			
	C				
	- FUEL CELL - VOLTAmps				
	1				
	2				
	3	↓			
METER	DC VOLTS M2		MC432-0237 -0001	2058911-01	20 TO 45 VOLTS M2
METER	M3 DC AMPS/516 STR		Y -0003	2058911-03	0 TO 500 AMPS M3

REV A - M3 - DUAL FUNCTION

REF. DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	ENG.	APPR.	TITLE
V270-730102-1	A		B	4/15/76	MW		3/29/76			PANEL F9

TYPE OF EQUIPMENT	NAME	OPERATION PROC PART NO.	SPD NO.	REMARKS
10 LT MAT.	A	MC 434-0073		DBSC FIRE WARNING 10 LIGHT MATRIX
	CABIN			
	L FLT DECK			
	AV BAY 1			
	2			
	3			
REV	B			
	PAYLOAD			
	R FLT DECK			
	AV BAY 1			
	2			
	3			

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	ENG.	APPR.	TITLE
VL 70-730102	31V73A1A1	1	1	A	4/15/76	M. W. Smith		3/30/76	TF Newport		PNL L1A1
				B							
				C							

PANEL L1A1

PAGE 3 OF 3

MISCELLANEOUS COMPONENTS

TYPE OF EQUIPMENT	NAME	DESIGNATION- PROC. SPEC. NO.	SPD. PART NO.	COMMENTS
EVENT IND DS1	CABIN RELIEF A	MC 432-0222-		TYPE 3 STATE 2A LEGEND OP-BD-CL OP-CL
DS2	B			
DS3	CABIN VENT VENT ISOL			
DS4	VENT			
DS5	ATM PRESS CNTRL O ₂ SYS1 SUPPLY			2 STATE 2A OP-CL
DS6	N ₂			3 STATE 3A OP-B.P.-CL
DS7	REG INLET			
DS8	O ₂ EMERG			
DS9	SYS2 SUPPLY			2 STATE 2A OP-CL
DS10	N ₂			3 STATE 3A OP BP-CL
DS11	REG INLET			

REV A - DS1 - DS5 & DS9 - DS11

REF. DWG. NO. VL70-730102 31V73A2A1	REV. PAGE 1 1	DATE 4/14/76	ENG. MWB	APPR.	REL. DATE 3/30/76	ENG. TF O'Neil	APPR.	TITLE PNL L2A1
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BREAKER NAME	A/C CB NO.	C.B. PERCENTAGE AND PART NO. (IF POPPABLE)	Q.C. PKT NO.	Q.C. NO.	FEEDER BUS	SEE SKETCH	COL NTS
FREON LOOP 2 PUMP B ACI & C	CB 41		MC 454- 0026	1003396-01		CB'S POPPABLE	
FREON FLOW PROP X 1	42						
SIG COND X 1	43						
FLOW PROP + 2	45 44						
SIG COND + 2	46 45						
IMV FAN A ACI & A	48 46						
ACI & B	49 47						
ACI & C	50 48						

REV A - ENTIRE PG.

REF. DWG. NO. VL70-730102 31V73A4	REV. PAGE 1 1	REV. DATE 4/14/76	ENG. M. J. B. B. B.	APPR. _____	REL. DATE 3/30/76	ENG. I.F. G. G. G.	APPR. _____	TITLE CB'S PNL 64
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CIR	BREAKER NAME	CB NO.	C.B. COVERAGE AND PART NO. (IF POPPABLE)	REL. SPD NO.	FEEDER BUS	SEE SKETCH	CO .NTS
100 FAN B	AC2 0A	51 CB 49	MC 454-0026	1003396-01		CBS TYP POPPABLE	
	AC2 0B	2 50					
	AC2 0C	3 51					
FAN C	AC3 0A	4 50					
	AC3 0B	5 50					
	AC3 0C	6 54					
HYD RTY - 1	AC1 0B	7 55					
TACAN 1	AC1 0C	58 50					

REV (A) - CB NO'S

REF. DWG. NO. VU70-730102 31V73A4	REV. PAGE 1 2	REV. DATE 4/14/76	ENG. M. J. [Signature]	APPR. [Signature]	REL. DATE 3/30/76	TITLE CBS PANEL 14
			ENG. R.F. [Signature]	APPR. [Signature]		

CIRCUIT BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF POPPABLE)	PART NO.	NO.	FEEDER 'BUS	SEE SKETCH	CO NTS
LG SENS R 2 AC2ΦA	59 CB 57		AC 454- 0026	1003396-01			
HYD QTY 2 AC2ΦB	60 58						
TACAN 2 AC2ΦC	61 59						
LG SENS R 2 AC3ΦA	62 60						
HYD QTY 3 AC3ΦB	63 61						
TACAN 3 AC3ΦC	64 62						
FUEL CELL 1 PUMPS AC1ΦA	65 63						
AC1ΦB	66 64						

REV. (A) - CB NO'S 2 CB 62 & CB 59

REF. DWG. NO.

VL70-730102

31V73A4

REV.

REV.

DATE

ENG.

APPR.

PAGE

REV.

DATE

ENG.

APPR.

REL. DATE

3/30/76

CB'S

PNL L4

TITLE

ENG.

J.E. Herbert

APPR.

CIR	BREAKER NAME	A/C CB NO.	C.B. ASSESSMENT AND PART NO. (IF APPLICABLE)	NO.	FEEDER BUS	SEE SKETCH	CO NTS
	FUEL CELL 1 PUMPS AC1 QC	67 CB 65	MC-454- 0026	1003396-01			
	AC2 QA	68 66					
	AC2 QB	69 67					
	AC2 QC	70 68					
	AC3 QA	71 69					
	AC3 QB	72 70					
	AC3 QC	73 71					
	HUMIDITY SEPARATOR HUA SEP A AC1 QA	74 72					

REV (A) - CB NO'S

REF. DWG. NO. V470-230102 31V73A4	REV. PAGE 1 2	DATE 4/14/76	ENG. maurice	APPR.	REL. DATE 3/30/76	CB'S PNL 14	TITLE
					ENG. J.F. Gubert		
					APPR.		

CIRCUIT BREAKER NAME	CB NO.	U.S. INVENTORY AND PART NO. (IF POPPABLE)	PAR. NO.	STD. NO.	FEDER. BUS	SKETCH
KV BAND	AC10B	1003396-01	MAC 454-0026	NO		CB TYP. POPPABLE
AC10C	83					
B AC20A	84					
AC20B	85					
AC20C	86					
MAIN ENG 1 PWR AC10A	87					
AC10B	88					
AC10C	89					

REV (A) - ENTIRE PG.

REF. DWG. NO. VL70-730102 31V73A4	REV. PAGE 1 2	REV. DATE 4/14/76	ENG. M. W. B. B. B.	APPR.	REL. DATE 3/30/76	TITLE CB's PNL L4
				APPR.		

CIR	BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF POPPABLE)	PA. NO.	SPD NO.	FEEDER BUS	SEE SKETCH	TS
	MAIN ENG 1 PWR AC2QA CB 87	87		MC454-0026	1003396-01		CB TYP POPPABLE	
		88 40						
	AC2QB							
		89 41						
	AC2QC							
		90 42						
	AC3QA							
		91 43						
	AC3QB							
		92 44						
	AC3QC							
		93 45						
	H ₂ O CNTLR 2							
		94 46						
	CABIN AIR S/C							

REV(A) - CB NO'S

REF. VLT0-730102 31V73A4	DWG. NO.	REV. 1	PAGE 2	REV. A	DATE 4/14/76	ENG. M. J. J. J.	APPR.	REL. DATE 3/30/76	TITLE C.B's
				B				ENG. I. F. J. J.	PWL L4
				C				APPR.	

CIRCUIT BREAKER NAME	A/C CB NO.	C.B. NUMBER AND PART NO. (IF POPPABLE)	PAR NO.	ROC NO.	SPD NO.	FEEDER BUS	SEE SKETCH	NTS
CABIN FAN B AC2 FA CB 97	95 CB 97		MC 454- 0026		1003396-01		CB TYP POPPABLE	
AC2 FB	96 98							
AC2 FC	97 99							
A AC3 FA	98 100							
AC3 FB	99 101							
AC3 FC	100 102							
LIGHTING PANEL LIGHTER	101 103							
OVHD	103 104							

REV (A) - CBNOS

REF. DWG. NO. VL70-230102 31V7344	REV. PAGE 1 2	REV. DATE A 4/14/76 B C	ENG. APPR. M. W. B. [Signature]	REL. DATE 3/30/76	TITLE CB's PNL L4
ENG. T. F. Herbert APPR.					

CIR	BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF POPPABLE)	PAN. NO.	ROC NO.	S.D. NO.	FEEDER BUS	SEE SKETCH	NTS
	LGHTNG	CB		MC 454- 0026		1003396-01		CB EXP POPPABLE	Deleted DTD.6
	INST OS	103							
	ANNUN L10VHD	106							
	PANEL R	104 102							
	NUMERICS								Deleted DTD.6
	COAS								Deleted DTD.6
	PANEL MS	106 110							
	↓ OS	107							Deleted DTD.6
	MAIN ENG 3 PWR ACIDA	108 112							

REV A - ENTIRE PG.

REF. DWG. NO. VL 70-730102 31V73A4	REV. PAGE 1 2	DATE 4/14/76	ENG. mgw	APPR.	REL. DATE 3/30/76	CBS PNL 14	TITLE
					ENG. IF <i>gnd</i>		
					APPR.		

CIRCUIT BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF POPPABLE)	ROC PART NO.	NO.	FEEDER BUS	SEE SKETCH	QUANTITY
MAIN ENG 3 PWR AC1 QB	109 CB #3		MC 454 - 0026	1003396-01		SEE SKETCH POPPABLE	
AC1 QC	110 #4						
AC2 QA	111 #5						
AC2 QB	112 #6						
AC2 QC	113 #7						
AC3 QA	114 #8						
AC3 QB	115 #9						
AC3 QC	116 #10						

REV (A) - CB NO'S

REF. NO. VL70-230102 31V73A4	REV. PAGE 1 2	DATE 4/14/76	ENG. mwanda	APPR.	REL. DATE 3/30/76	TITLE CB's
				ENG. JF GILBERT	PNL L4	
				APPR.		

CIR. BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF POPPABLE)	PA. NO.	SPD NO.	FEEDER BUS	SEE SKETCH	NTS
CABIN T CNTLR 2	117 CB 121		MC 454- 0026	1003396-01		CB 117 POPPABLE	
AV BAY 2 S/C	118 122						
CABIN T CNTLR 1	119 123						
AV BAY 3 S/C	120 124						
H ₂ O CNTLR 1	121 125						
AV BAY 1 S/C	122 126						
ANNUN R CTR	127						
NUMERICS ANNA FWD	123 128						

REV (A) - CB NOS

REF. DWG. NO. VL70-230102 31V73A4	REV. PAGE 1 2	REV. DATE A 4/14/76	ENG. APPR. mawar	REL. DATE 3/30/76	TITLE CB's
		B		ENG. IF <i>Robert</i>	PNL L4
		C		APPR.	

NTS

[illegible]

REV A - CBN'S

REF.	DWG. NO.	REV.	PAGE	TITLE
VL70-230102 3IV73A4		1	2	L4 CB's
REL. DATE				ENG.
3/30/76				JF Thibault
APPR.				APP.
DATE				ENG.
4/14/76				M. Gaudin
REV.				
A	B	C		

[illegible]

BEV (A) - M1 + M2 SCALE CHANGE

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102		1	2	A	4/15/76	mmw		3/29/76	PANEL 02 OVRD
33V 73A2			12/2/75	B				ENG. <i>ga</i>	
				C				APPR.	

SWITCH LISTINGS

REF.	SWITCH NAME	TYPE SWITCH	SWITCH NOMEN-CLATURE	CHARTER PPN	CORE LOG. SPN	SEE SKETCH	NO. D.I. AT THIS POSITION	COMMENTS
12	AND BUS SELECT L/LOAD	3	MNA MNB	② 6103	1003370-01		OFF	"ON-OFF-ON"
13	AND BUS SELECT P/CTR	3	MNB MNC	③ 6103	-01		OFF	↓
14	LAMP TEST	4	AL KTR AL QVHD	④ 6105	-04			See PTP. 6
15	MASTER TIMING UNIT	3	OSC 1 OSC 2	③ 6103	-01		AUTO	"ON-OFF-ON"
17 16	DISPLAY ELECTRONICS UNIT 1	2	LOAD	② 6102	-05		OFF	"ON" - OFF
18 19	2	2	LOAD		-05		OFF	
20 19	3	2	LOAD		-05		OFF	
21 20	4	2	LOAD		-05		OFF	
22 21	MDM FLI	1	ON	③ 6101	-02		OFF	"ON ON"
23 22	MDM FLT CRT AFT EAI	1	ON		-02		OFF	
24 23	" FAZ	1	ON		-02		OFF	

* MOMENTARY
 ③ ME 453-0102-
 3-ON-OFF-ON 2-ON-OFF-ON REV ① - SW NO'S
 4-ON-OFF-ON 1-ON-ON

REF.	DWG. NO.	REV.	PAGE	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-750102	1	1	2	4/15/76	mmg/ab		3/29/76	PAGE 06 DVHD
33V18A6	12/12/75	B					ENG. Jee	
		C					APPR.	

SWITCH SYMBOLS

REF.	SWITCH NAME	TYPE SWITCH	SWITCH NOMEN-CLATURE	PPN	DATE	SEE SKETCH	NO. DI AT THIS POSITION	COMMENTS
24	MDM FLT CRT AFT FA3	1	ON	610	10/22/70		OFF	"DN-ON"
25	" FA4	1	ON				OFF	
26	MDM PL2	1	ON				OFF	
27	MDM FLT CRT AFT FFT	1	ON				OFF	
28	" FF2	1	ON				OFF	
29	" FF3	1	ON				OFF	
30	" FF4	1	ON				OFF	
31	GPC POWER 1	1	ON				OFF	
32	" 2	1	ON				OFF	
33	" 3	1	ON				OFF	
34	" 4	1	ON				OFF	

① ME 452-0102-

REV A - SW NO'S

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-1130102	33 V73A6	1	2	A	4/15/76	M. M. M. M. M.		3/27/76	PANEL 06 OVHD
		B						ENG. J. J.	
		C						APPR.	

SWITCHING LOG

REF.	SWITCHING LOG	TYPE SWITCH	SWITCH NOMEN-CLATURE	OPERATOR PPN	DATE LOG. SPN	SEE SKETCH	NO. AT THIS POSITION	COMMENTS
35	GPO POWER 6	1	ON	06101	1003300-02		OFF	"ON-DN"
36	GPO OUTPUT 1	1	NORMAL				TERMINATE	
37	" 2	1	NORMAL				TERMINATE	
38	" 3	1	NORMAL				TERMINATE	
39	" 4	1	NORMAL				TERMINATE	
40	" 6	1	NORMAL				TERMINATE	
41	IPL SOURCE	3	MMU1	0-6103	1003300-01		OFF	ON-OFF-DN
42	GPO MODE 1	11	MMU2				STAY	#-OFF-DN
43	" 2	11	#RUN				STAY	
44	" 3	11	HALT				STAY	
45	" 4	11	#RUN				STAY	
46	" 6	11	HALT				STAY	

LOCKED
 (X) ME 450-0102 - REV A - SW NO'S AND SW 35 + SW 40

REF. V/L 70-730102 38V R3A6	DWG. NO. 12/10/75	REV. 1	PAGE 2	REV. A	DATE 9/15/76	ENG. M. W. B. B.	APPR.	REL. DATE 3/29/76	ENG. J. A.	APPR.	TITLE PANEL 06 OVHD
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TYPE OF EQUIPMENT	NAME	DISPOSITION PPN	SPAN	COMMENTS
EVENT INDICATOR	DS 4	MC 452-0022		2-STATE BP
EI	DS 5			2-STATE BP
EI	DS 6			2-STATE BP
EI	DS 7			2-STATE BP
EI	DS 8			3-STATE RUN
EI	DS 9			3-STATE RUN
EI	DS 10			3-STATE RUN
EI	DS 11			3-STATE RUN
EI	DS 12			3-STATE RUN
POST ECTION LT	541 542	ME 452-0061		?
PO LT	542 541			

REV(A) - P.B. SW. NOS

REF. DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 40-730102	1	2	A	4/15/76	mmw/burke		3/5/76	PARALL 06 OVTD
33V 73A 6		12/12/75	B				ENG. Jm	
			C				APPR.	

MISCELLANEOUS COMPONENTS

TYPE OF EQUIPMENT	NAME	DISPOSITION PPN	SPN	COMMENTS
TRANSFORMER	T1 LIGHTING LEFT OVERHEAD PANEL	MC 446-0034		LEFT LIGHTING
TRANS.	T4 LEFT CENTER PANEL			LEFT
TRANS.	T3 LEFT INSTRUMENT			LEFT
TRANS.	T2 OVHD INST LT SHIELD FLOOD			LEFT ↓
ROTARY SW	S4 UHF MODE SELECT	ME452-0093		S-POS
SW	S11 ANNUNCIATOR INTENSITY	ME444-0059		LIGHTING
LIGHT				
POT				
FRAMES.	— LT CTC FLOOD			NO. NOT ON SWG
EVENT INDICATORS	DS1 STAR TRACKER DOOR 1	MC430-0222		3 STATE - OP
EI	DS2 STAR TRACKER DOOR 2			3 STATE - OP
EI	DS3 GPI POWER OUTPUT 1			2 STATE - EP

REV (A)-T1-T4

REF. DWG. NO. VL 70-730102 33V73A6	REV. PAGE 1 2 12/12/75	REV. DATE A 4/15/76 B C	ENG. APPR. M. W. B. [Signature]	REL. DATE 3/29/76 ENG. [Signature] APPR. [Signature]	TITLE PADEL 06 OVHD
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REV(A) - SW NOS

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-750103		1	2	A	4/15/76	M. W. Anderson		3/29/76	ANUEL 06 OVHD
33 V73A6				B				ENG. <i>[Signature]</i>	
				C				APPR. _____	

TYPE OF EQUIPMENT	NAME	DISPOSITION PPN	SPN	COMMENTS
FLOOD LIGHT	FLOOD LIGHT			2 FLOODS
POT	SEAT CTRNSL RIGHT ACTRA FLOOD			NO. NOT ON DWG
TEMS.	NUMERIC LIGHTING	MC 446-0034-5001		LIGHTING DISTRO - (C)
	OVERHEAD RIGHT PANEL LTG			
	EIGHT INSTRUMENT LTG			
	RIGHT PANEL OVER INSTRUMENT LTG			
	RIGHT GLARE FIELD FLOOD LTG	ME444-0059		
DIGI-SW	MLS CHANNEL SELECT	MC 452-0134-0004		3-digits
EVENT INDICATOR	OMS KIT TANK INSULATION A	MC 452-0222		3-STATE OP
ET	B			
ET	FWD RCS HE OXID			

REV(A) - R2 - T1-T4

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102	33V73AB	1	2	A	4/15/76	mevander		3/29/76	PAVEL O8 DV4D
			12/12/75	B				ENG. Jaa	
				C				APPR.	

SWITCH NAME		TYPE SWITCH	SWITCH NOMEN. CLATURE	PPN	SPN	SEE SKETCH	NO. OF COMMENTS
1	AA	3	TR OFF	(X)-6103	1003370-01		RCV "DN-OFF-ON"
2	AG1	3	TR OFF				RCV
3	AG2	3	TR OFF				RCV
4	ICOM A	3	TR OFF				RCV
5	ICOM B	3	TR OFF				RCV
6	POWER	3	AUD/TONE OFF				AUD
8	PAGE	2 X	* ON	(X)-6101	1003370-05		OFF "DN-ON"

REV A - SW 4 - SW. TYPE.

(X) ME 452-0102 -

REF. DWG. NO. VL70-730102 33V73A9	REV. PAGE 1 2 12/12/75	REV. DATE A 4/14/76 B C	ENG. APPR. monday [Signature]	REL. DATE 3/29/76	TITLE RIGHT AUDIO PANEL 09 OVHD
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PANEL 02 SIMULATOR 5075 PAGE 07

CIRCUIT BREAKER NAME	CB NO.	C.B. NUMBER AND PART NO. (IF PORTABLE)	DATE	SPN	FEEDER	SKETCH	ITS
ESS 1BC	1			10039916-01			
CLWA							
MN A CONTR	2						
AC1 SNR	3						
MTU A	4						
FLOOD LT GLARESHIELD	5						
LDO GEAR ARM DA RESET	6						
CRYO CNTLR O2 TK2	7						
CRYO CNTLR H2 TK2	8						

REV 8 - DELETED SW. 5 & 6

REF. DWG. NO.	REV. PAGE	REV. DATE	ENG.	APPR.	REL. DATE	TITLE
VL70-730102	1 2	4/14/76	mmw		3/29/76	PANEL 013 OUND
33V73A13	12/12/75				ENG	
					APPR.	

CIRCUIT BREAKER NAME	CB NO.	TEST, SERVICE AND PART NO. (IF POPPABLE)	PN	SPN	FEEDER BUS	SEE SKETCH	NTS
ESS 2CA C/W B	9			1003996-01			
MNB CONTRL	10						
AC 2 SNR	11						
MTU B	12						
FLOOD RT GLASSHIELD	13						
CRYO CNTLR O ₂ TKI	14						
CRYO CNTLR H ₂ TKI	15						
ESS 3AB MNC CONTR	16						

REV (A) - DELETED SW 13

REF. DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 73-730102 33V73A13	1	2	A	4/14/76	moularby		3/24/76	PANEL 013 OVHD
						ENG.		
						APPR.		

CIRCUIT BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF PORTABLE)	Q AEL SPN	Q QNS. SPN	FEEDER BUS	SEE SKETCH	CB ENTS
ESS 3AB AC 3 SNR	17		1003996-01				
GPC STATUS	18						
FLOOD 005	19						
ESS 1BC CRYO QTY O ₂ TK ₂	20 P						Per DTD.6
ESS 1BC CRYO QTY H ₂ TK ₂	21 P						Per DTD.6
ESS 2CA CRYO QTY O ₂ TK ₁	22 P						Per DTD.6
ESS 2CA CRYO QTY H ₂ TK ₁	23 P						Per DTD.6

REV(A) - DELETED 19 ADDED SW NO 20-23

REF. DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102 33V73A13	1	2	A	4/14/76	Mr. Bandy		3/29/76	PANEL 013 OUTID
		12/12/75	B				ENG. <i>[Signature]</i>	
			C				APPR. <i>[Signature]</i>	

CIRCUIT BREAKER NAME	A/C CB NO.	C.B. NUMBER AND PART NO. (IF FORFABLE)	PPN	ANAL.	SPN	FEED IN	SEE	SKETCH	MENTS
MN A									
FRIGN BYPASS VLV 2	17								
ATM PRESS CONTROL									
N ₂ SUPPLY 1	18								
O ₂ N ₂ CNTLR 1	19								
O ₂ KOV R	20								
N ₂ REG INLET 1	21								
CABIN VENT ISOL	34 22								
NOSE WHEEL STEERING	33 23								
↓ RADAR ALTM	24								

REV (A) - CB NO 22223

REF. DWG. NO. VL7D-730102 33V73A14	REV. PAGE 1 2 12/12/95	REV. DATE 4/14/76	ENG. Mawlsby	APPR.	REL. DATE 3/29/76	TITLE PANEL 014 DVTID
		ENG. <i>[Signature]</i>		APPR. <i>[Signature]</i>		

CIRCUIT BREAKER NAME	A/C CB NO.	C.B. NUMBER AND PART NO. (IF POSSIBLE)	PPN	SPN	FEEDER BUS	SKETCH	NTS
MIN A							
MLS 1	25		MC454-0026	1009396-01			
ADTA1	26						
STAR TRKR - Z	27						
ACCEL 1	28						
MMU 1	29						
DDU LEFT	30						
DDU AFT	31						
INST WTS L CTR	32						

REV A-CB 32

REF. DWG. NO. VL 10-730102 33 V73A14	REV. PAGE 1 2 12/2/75	REV. DATE A 4/15/76 B C	ENG. APPR. mmv/ky/ky	REL. DATE 3/29/76 ENG. <i>gpa</i> APPR.	TITLE PANEL 014 OUTHD
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SWITCH SETTINGS

SWITCH NAME	TYPE SWITCH	SWITCH POSITION-CLATURE	SPN	GENE LOG.	SEE SKETCH	NO. OF AT THIS POSITION	COMMENTS
1 BRAKES MANA	1	ON	⑧-6101	1003370-02		OFF	"ON-ON"
2 RGA 1	1	ON				OFF	
3 RDA 1A MANFLYR2 LOGIC	1	ON				OFF	
4 MANF L2R2 DRIVER	1	ON				OFF	
5 RDA 2B MANFLYR4 LOGIC	1	ON				OFF	
6 MANF L4R4 DRIVER	1	ON				OFF	
7 RDA 1A MANFI LOGIC	1	ON				OFF	
8 MANF FI DRIVER	1	ON				OFF	
9 L OMS ENG VLV	1	ON				OFF	
10 ASA 1	1	ON				OFF	
11 IMU 1	1	ON				OFF	See DTD.6

⑧ ME 452-0102- REV(A) - SW 3-8 NOMENCLATURE

REF. DNG. NO. VL 70-730102 33V 73414	REV. PAGE 1 2 12/2/75	REV. DATE A 4/14/76 B C	ENG. APPR. [Signature]	REL. DATE 3/29/76	TITLE PANEL 014 DUTED
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CIRCUIT BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF POSSIBLE)	PPN	DATE	CORE	FEEDER BUS	SEE SKETCH	COM ITS
ATM PRESS CONTROL	17							
11a SUPPLY 2								
22a2 CNTLR 2	18							
02 XOVCR 2	19							
N2 REG INLET 2	20							
CABIN VENT ISOL	21							
↓ CABIN RELIEF A	22							
EGDAR ALTM 2	23							
↓ MLS 2	24							

REV(A) - DELETED CB 21

REF. DNG. NO.	REV. PAGE	REV. DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102	1 2	4/14/76			3/29/76	PANEL 015 DUHD
33V73A15	12/12/75					
			ENG.	APPR.		

CIRCUIT BREAKER NAME	A/C CB NO.	C.B. AMPERAGE AND PART NO. (IF POSSIBLE)	AL N	WIRE SIZE	FEEDER BUS	SEE SKETCH	TS
MNO							
ADTA 2	25			100-454-0024 100-3398-01			
STAR TRKR. Y	26						
ACCEL 2	27						
MW 2	28						
DDU LEFT	29						
DDU RIGHT	30						
INST 475 RIGHT	31						

REV(A) - CB 31

REF.	DWG. NO.	REV.	PAGE	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-430100	33 V 75A 15	1	2	4/15/76	MDV/awm		2/29/76	PANEL DIS OVRD
							ENG. Jea	
							APPR.	

PANEL 015 SIMULATOR 0235 PAGE 4 OF 4

[illegible]

REV (A) - ANNUN & CO. NO'S

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102		1	2	A	4/14/76	mmubink		3/29/76	PANEL OIS OVHD
33V73A15		12/12/75		B					
				C					

CIRCUIT BREAKER LISTING	CIRCUIT BREAKER NAME	NVC CB NO.	C.B. NUMBER AND PART NO. (IF POSSIBLE)	REL PPN	SPN	BUS	SKETCH	COMMENTS
9	UTILITY POWER ALL AIS OEH			1003396-D1				
10	FLOOD RIGHT CTR							
11	FREON RAD CONTROL							
12	RAD CONTROL							
13	By PASS VLV 1							
14	By PASS VLV 2							
15	H ₂ O ALT PRESS							
16	ATM PRESS CONTR O ₂ EMER							

REV(A) - DELETED CB11 & 12

REF. DNG. NO. VL7D-730102 33V73A10	REV. PAGE 1 2 12/16/75	REV. DATE 4/15/76	ENG. <i>manu</i>	APPR.	REL. DATE 3/29/76	ENG. <i>Ja</i>	APPR.	TITLE PANEL 016 DUHD
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SWITCH SETTINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN. CLATURE	CANAL PPN	OPRS LOG. SYN	SEE SKETCH	ON AT THIS POSITION COMMENTS
1 BRAKES MNC	1	ON	⊗-6101	1003370-02		OFF "ON-ON"
2 RGA 3	1	ON				OFF
3 RJDA 2A MANF L3 R3/R5 LOGIC	1	ON				OFF
4 ↓ MANF L3/R3/R5 DRIVER	1	ON				OFF PER DTD.6
5 RJDF 2A MANF F3 LOGIC	1	ON				OFF
6 ↓ F3 MANF DRIVER	1	ON				OFF PER DTD.6
12 RJDF 2A MANF F4/F5 LOGIC	1	ON				OFF
13 ↓ MANF F4/F5 DRIVER	1	ON				OFF
7 R OMS ENG VLV	1 3	ON OFF	⊗-6103	1003370-02		OFF "ON-OFF-ON"
10 EMU 3	1	ON	⊗-6101	1003370-02		OFF "ON-ON"
11 FL3 CNTLR	1	ON	↓	↓		OFF ↓

REV ① - ME452-0102-
REV ② - SW526, 87012, 97013
SW7-TYPE

REF. DWG. NO. VL70-730102 33V73A10	REV. PAGE 1 2 12/12/75	REV. DATE 4/14/76	ENG. APPR. [Signature]	REL. DATE 3/29/76	TITLE PANEL 016 OVHD
		ENG. [Signature]		APPR. [Signature]	

SWITCH STINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN-CLATURE	CHASSIS PPN	CHASSIS SERIAL	SEE SKETCH	NO. OF AT COMMENTS THIS POSITION
12 212F-2A LOGIC	1	ON	12-6101	1003370-02		OFF Per DTD.6
13 212F-2A LOGIC	1	ON				OFF "ON-ON"
ASA 3	1	ON				OFF
4	1	ON				OFF

REV (A) - ENTIRE PG -

⑧ ME 452-0102-

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102		1	2	A	4/14/76	David Banks		3/29/76	PANEL 010 OUTD
33V 73A16				B					
				C					

PANEL 010 SIMULATOR SMS PAGE 2 OF

[illegible]

REV(A)-TYPE OF JACK

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102		1	2	A	4/15/76	mmw/amb		3/29/76	PANEL 019 OUTHD
33N73A19		12/12/75		B					
				C					

SWITCH ST-1063

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN-CLATURE	CHANNEL SPEC NO.	CORE LOC. PART NO.	SEE SKETCH	NO. OF at this Location	COMMENTS DESCRIPTION
Control Bus PWR							
S1 MNA	2	* Reset	6102	1003370-05			* ON - ON
S2 MNR	2	* Reset					
S3 MNC	2	* Reset					
ESS Bus Source							
S4 MNB/C	1	ON	6101	1003370-02			ON - ON
S5 MNC/A	1	OFF					
S6 MNA/B	1	ON					
S7 FC1	1	OFF					
S8 FC2	1	ON					
S9 FC3	1	OFF					
FC/Main Bus							
S10 A	9	* ON					* ON - OFF - ON
S11 B	9	* OFF					

* = mom

= locked pos

[N] = Null

REV(A) - ADDED SW NO'S

⊗ ME 452-0102

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	TITLE
VL 70-730102		1	1	A	4/15/76	mmw		3/24/76	PANEL R1A1
32V73A1A1		12-12-75		B		mmw		mmw	
				C					3057

SWITCH LISTINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN- CLATURE	CHANNEL SPD NO.	CORE LOC SPD NO.	SEE SKETCH	NO OF AT THIS Position	COMMENTS
FC/Main BUS C	9	* ON * OFF	6			# [N]	* ON - OFF - ON
MN BUS TIE A	4	* ON * OFF	6105	1003370-04		[N]	* ON - OFF - ON
B	4	* ON * OFF				[N]	
C	4	* ON * OFF				[N]	
INV PWR	4	* ON * OFF				[N]	
1	4	* ON * OFF				[N]	
2	4	* ON * OFF				[N]	
3	4	* ON * OFF				[N]	
INV/AL BUS	4	* ON * OFF				[N]	
1	4	* ON * OFF				[N]	
2	4	* ON * OFF				[N]	
3	4	* ON * OFF				[N]	

* = from

= Loc. and pos.

[N] = Null

REV 6 - ADDED SW NO'S

⊗ = ME 452-0102

REF.	DWG. NO.	REV.	PAGE	DATE	ENG.	APPR.	REL. DATE	TITLE
VL70-73 0102	1	A	1	4/15/76	main body		3/26/76	PANEL
32 V73 A1 F1	12-12-75	B						R1 A1
		C						1203

SWITCH LISTINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN- CLATURE	CHANNEL SPEC NO	CORE LOC. SPD PART NO	SEE SKETCH	NO OF CT THIS POSITION	COMMENTS DESCRIPTION
AC BUS SMR							
1	3	Auto Trip Monitor	6103	1003370-01		OFF	ON - OFF - ON
2	3	Auto Trip Monitor				OFF	
3	3	Auto Trip Monitor				OFF	
Payload						OFF	
Cabin	3	MNB				OFF	
		MNC				OFF	
PRI	4	ON	6105	1003370-04		[N]	OFF - ON
MNB	4	OFF				[N]	
PRI	4	ON				[N]	
FC3	4	OFF				[N]	
PRI	4	ON				[N]	
MNC	4	OFF				[N]	
AUX	1	ON	6103	1003370-01		[N]	ON - OFF - ON
	3	OFF				OFF	
AFT	1	ON	6101	1003370-02			ON - ON
MNB		OFF					
AFT	1	ON					
MNC		OFF					

[N] = null

REV(A) - ADDED SW NO'S
CHANGED SW 26-29 SWTYPE

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	FILE
VL 70-73010 2	2	2	2	A	4/15/76	mev		3/26/76	PANEL
32V73 A1A1	12-12-75	B		B				ENG. mev	RIAL
		C		C				APPR.	3067

MISCELLANEOUS COMPONENTS

TYPE OF EQUIPMENT	NAME	DISPOSITION SPEC NO	SPD PART NO	COMMENTS	DESCRIPTION
EVENT INDICATORS	POWER DISTRIBUTION FC MAIN BUS	MC432-0222			STATE ON - OFF
	A DS1				
	B DS3				
	C DS5				
	MN BUS TIE				
	A DS2				
	B DS4				
	C DS6				
	INV PWR				
	A DS7				
	B DS9				
	C DS11				
	INV LAC BUS				
	A DS8				
	B DS10				

REV A - ADDED DS NO'S

REF. DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	REL. DATE	ENG.	APPR.	TITLE
VL70-730102	1	2	A	4/15/76	Mawdsby		3/24/76	Mawdsby		PANEL
32V73A1A1	12-12-75		B							RIAI
			C							

SWITCH LISTINGS

SWITCH NAME	TYPE SWITCH	SWITCH NOMEN- CLATURE	CHANNEL SPEC NO	CORE LOC SPD PART NO	SEE SKETCH	NO DI AT THIS POSITION	COMMENTS DESCRIPTION
<u>APU HYD</u>							
<u>BOILER N₂ SUPPLY</u>	1	ON	6-6101	1003370-02			ON - ON
		OFF	-	-			
	1	ON	-	-			
		OFF	-	-			
	1	ON	-	-			
		OFF	-	-			
<u>ET Umbilical Door</u>	3	GPC	6-6103	1003370-01		OFF	ON - OFF - ON
<u>MODE</u>		Man					
	1	GND	6-6101	1003370-02			ON - ON
<u>Centerline Hatch</u>		STOW	-	-			
<u>LEFT</u>	3	OPEN	6-6103	1003370-01		OFF	ON - OFF - O
<u>DOOR</u>		CLOSE					
<u>LATCH</u>	3	Release				OFF	
<u>RIGHT</u>		LATCH					
	3	OPEN				OFF	
		CLOSE					
	3	Release				OFF	
		LATCH					
<u>MPS</u>	10	# AUTO	6-6101	1003370-01			# ON - ON
<u>LHA ULLAGE</u>		OPEN	-	-			

④ ME 452-0103

REV ④ - 503

LOCKED POSITION

REF.	DWG. NO.	REV.	PAGE	DATE	ENG.	APPR.	REL. DATE	TITLE
VLT-730102	2	2	2	4/15/76	mmw	mmw	3/26/76	PANEL
32073A2							ENG. mmw	P2
PANEL R2								

REV A-S14-S18-SWTYPF

2010-254-0102

DELETED 520

REF. _____
DWG. NO. _____

REV. PAGE

REV.

LATE

ENG.

Appendix

VL 70-730107

2.2

A

A

4/15/76

Marshall

REL. DATE 3/26/76

32073 A-1

56-21-21

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ENC 2002.2.1

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1

THE UNIVERSITY OF CHICAGO

Abstract

ENG. W. W. G. G. G.

1304
151

1304
151

[illegible]

REV @ - KEY BOARD NOMENCLATURE

REF.	DWG. NO.	REV.	PAGE	REV.	DATE	ENG.	APPR.	TITLE
V L70-73 0102		2	2	A	4/15/76	Moulins		PANEL
35U 73 A2A1		12-12-76		B				C2A1, C2A2,
35U 73 A2A2				C				C2A3
35U 73 A2A3								

CIRCUIT BREAKER NAME	REC NO.	DATE AND PART NO. (IF POPPABLE)	PART NO.	ROC NO.	FEEDER BUS	SEE SKETCH	REMARKS
HUMIDITY SEPARATOR	75		MC 454-0026	1003396-01		CB POPPABLE	
HUMIDITY SEPARATOR	76						
ACI QC	77						
ACI QC	78						
ACI QC	79						
ACI QC	80						
SIG COND HUM SEP	81						
IMV FAN	82						
KU BAND A	83						

REV (A) - CB NO'S - CB 82 TO 30

REF. DWG. NO. VL70-730102 31V73A4	REV. PAGE 1 2	DATE 4/14/76	ENG. mmvander	APPR.	REL. DATE 3/30/76	TITLE CBs
			ENG. IF Object		PNL 14	
			APPR.			

PDR Ground Rules

SMS WP #20 (Crew Station, C&D)

1. Design, build, and assemble all required hardware which has a 50% + confidence factor of being correct.
2. Stagger schedule as much as possible to take advantage of obtaining data in lieu of having to use assumptions but such that Singer does not slip end dates. As required, make options based on assumptions which will enable Singer to perform needed work on a workable schedule to meet their end item delivery within cost and schedule.
3. Procure all needed vendor parts A/R for both FBCS and MBCS and assemble them per ground rule #1 above.
4. Any exceptions to the above three ground rules are to be flagged, with rationale, to R. D. McCafferty for his understanding and possible redirection.
5. Document through minutes, as a minimum, general actions taken!

DATA / DRAWING TO BE USED

AREA

V070-XXXXXX

VL70-XXXXXX

ASSUMPTION # A20-
OPTION # 020-

DECISION
DATE

REMARKS

CREW STATION
CONTROLS AND DISPLAYS

[illegible]

DATE	THE SINGER COMPANY SIMULATION PRODUCTS DIVISION BINGHAMTON, NEW YORK	PAGE NO.
REV.		REP. NO.

CREW STATION CONTROLS AND DISPLAYS

Each crew station control and display will be duplicated in appearance, location, feel, fit, action and reaction to the high degree required for crew training.

All cockpit lighting controls on simulated panels will be operative. Lighting will be variable where required, through operation of the dimming controls. Panels will be lit as in the spacecraft, and integral lighting for instruments will be provided. Power logic will be incorporated in these circuits.

Most of the crew station controls and displays will interface with the simulation computer complex through analog and digital Signal Conversion Equipment (SCE).

Discrete Functions

Discrete digital functions include such devices as switches, flag and lamp type indicators (event indicators and annunciators), circuit breakers, decimal readouts, keyboards, and other special devices such as the DEU or parallel to serial converters for special instruments.

Representative examples of discrete components and how they are wired to the SCE are illustrated.

DATE	THE SINGER COMPANY SIMULATION PRODUCTS DIVISION BINGHAMTON, NEW YORK	PAGE NO.
REV.		REP. NO.

The basic design philosophy used on the OAS shall also apply to the SMS. All switches of 3 positions or less shall have N-1 DI's assigned (n=number of positions). All switches 4 positions or more shall have a DI for each position. The position that will not be assigned a DI shall be (a) the "OFF" position, or (b) the switch position shown on the layout drawing if it is a three position switch, or if there is no "OFF" position.

The lamp test function shall be provided as in the spacecraft, and, as in OAS, all the LO-controlled lamps shall be diode isolated. This will prevent false indications in the SCE self-test when lamp test is actuated.

Digital I/O are DI's, DO's, and LO's.

DATE

THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

PAGE NO.

REV.

BINGHAMTON, NEW YORK

REP. NO.

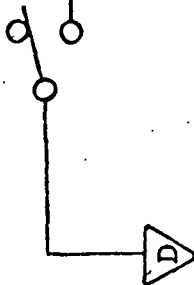
DATA
CONVERSION
EQUIPMENT

DIGITAL INPUT

DI

PANEL
SWITCH

TWO POSITION ALTERNATE ACTION TOGGLE SWITCH



DATE

REV.

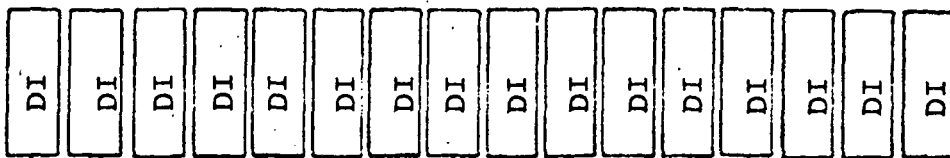
THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

BINGHAMTON, NEW YORK

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REP. NO.

DATA
CONVERSION
EQUIPMENT



DIGITAL WORD INPUT

* SPECIFY NUMBER OF BITS

DIGI-SWITCHES
KEYBOARDS



e.g.

DATE

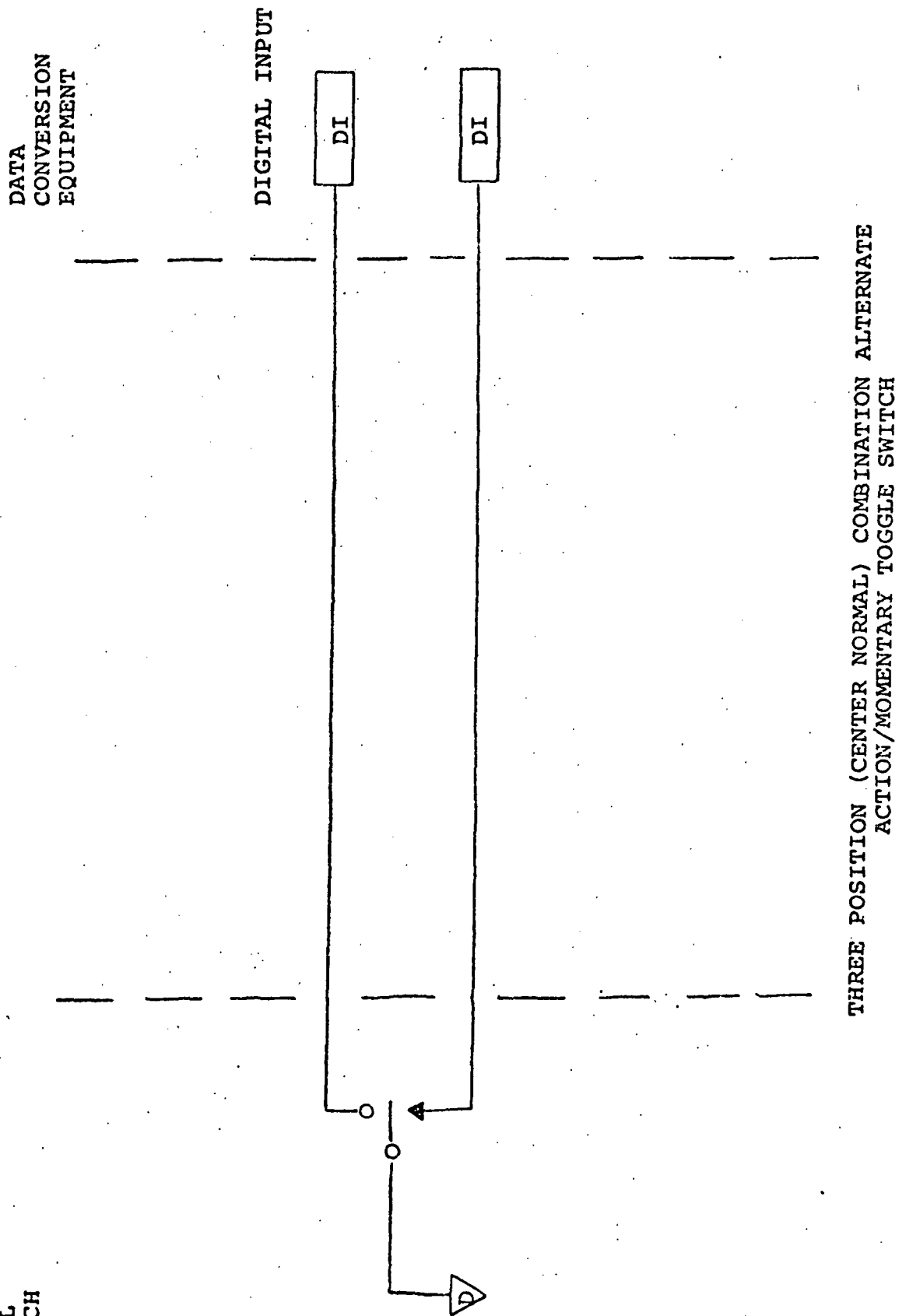
THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

PAGE NO.

REV.

BINGHAMTON, NEW YORK

REP. NO.



DATE

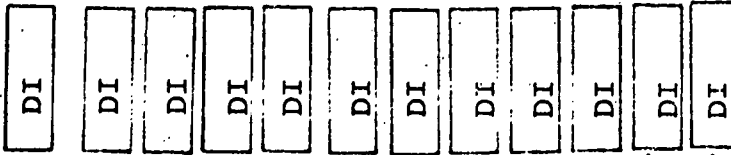
THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

PAGE NO.

REV.

BINGHAMTON, NEW YORK

REP. NO.

DATA
CONVERSION
EQUIPMENTDIGITAL
INPUT

ROTARY SWITCH
* SPECIFY NUMBER OF POSITIONS (n) AND
NUMBER OF DI BITS

PANEL
SWITCHSTOP
POSITION

DATE 6-22-73

THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

PAGE NO. B-16

REV.

BIRMGHAMTON, NEW YORK

REP. NO.

DATA
CONVERSION
EQUIPMENT

DI

DIGITAL
INPUT

C.B. PANEL

CIRCUIT BREAKER

POPPABLE CIRCUIT BREAKER

DATA
CONVERSION
EQUIPMENT

LO

DIGITAL
OUTPUT

DATE 6-22-73

THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

PAGE NO. B-23

REV.

BINGHAMTON, NEW YORK

REP. NO.

DATA
CONVERSION
EQUIPMENT

SWITCH/INDICATOR

DI
DIGITAL
INPUT

DI
OUT

e.g.
BODY FLAP: AUTO/MAN
SPEED BRAKE/THROT: AUTO/MAN

L. T.

DATA
CONVERSION
EQUIPMENT

LO

LO

DIGITAL
OUTPUTS

ILLUMINATED MOMENTARY SWITCH WITH COMPUTER
ACTIVATED LIGHTS

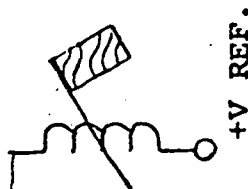
DATE	THE SINGER COMPANY SIMULATION PRODUCTS DIVISION BINGHAMTON, NEW YORK	PAGE NO.
REV.		REP. NO.

DATA
CONVERSION
EQUIPMENT

INDICATOR FLAG

LO

DIGITAL
OUTPUT



e.g.
EVENT INDICATOR
2-STATE

FLAG INDICATOR

DATE 6-22-73

THE SINGER COMPANY
SIMULATION PRODUCTS DIVISION

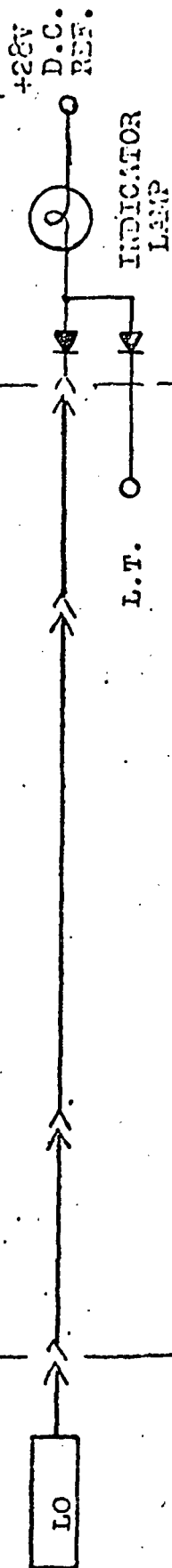
PAGE NO. D-17

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REP. NO.

DATA
CONVERSION
EQUIPMENT



e.g.
ANNUNCIATORS

INDICATOR LAMP

DATE 6-22-73

THE SINGER COMPANY
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REV.

BINGHAMTON, NEW YORK

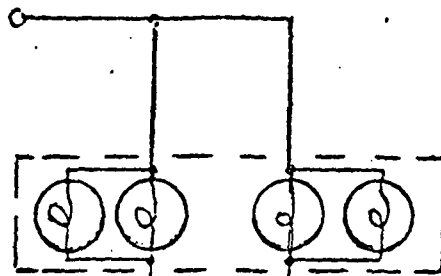
REP. NO.

DATA
CONVERSION
EQUIPMENT

LO

LO

DIGITAL
CUEPITS (n)



CAUTION/WARNING
INDICATOR (n)

n=ARRAY

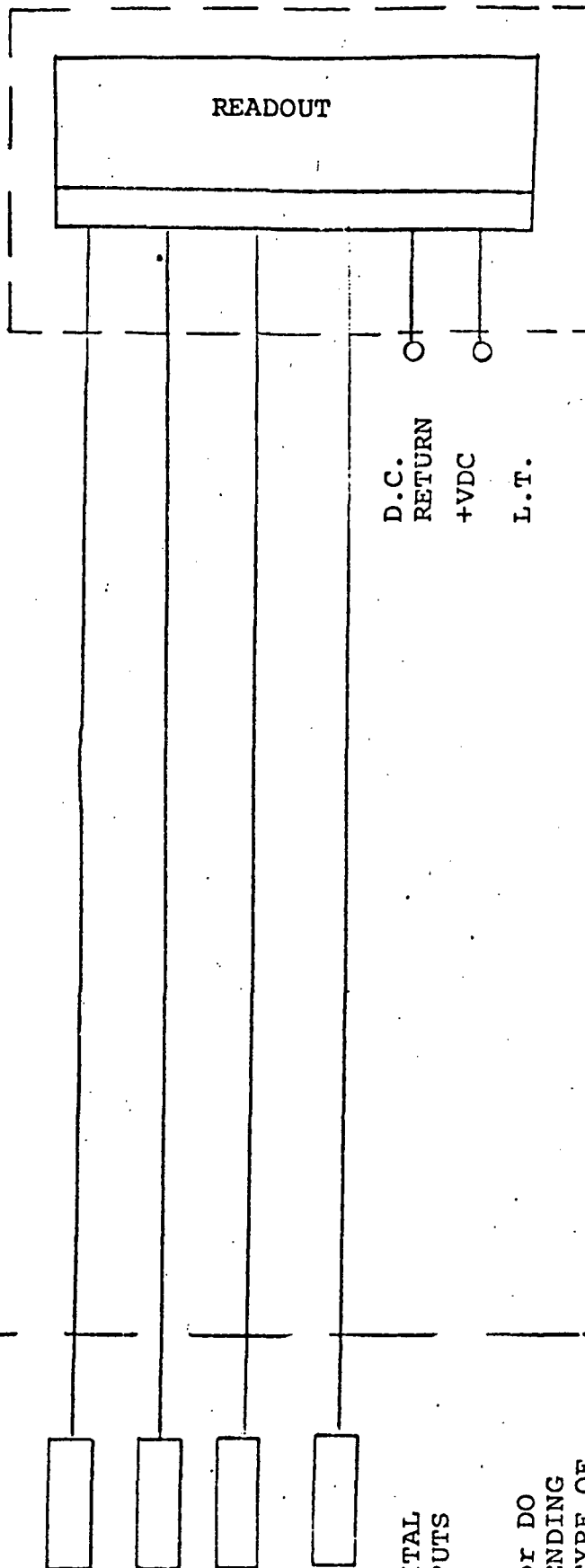
CAUTION & WARNING (40)
COMPUTER STATUS (25)
FIRE WARNING (10)

CAUTION/WARNING INDICATOR

e.g.

L.T.

DATA
CONVERSION
EQUIPMENT



DIGITAL
OUTPUTS

LO or DO
DEPENDING
ON TYPE OF
READOUT

DIGITAL READOUT (1 DIGIT)

e.g.
EVENT TIMERS
MISSION TIMERS

DATE

REV.

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DEVICE

**DATA
CONVERSION
EQUIPMENT**

**DIGITAL
WORD
OUTPUT**

DIGITAL WORD OUTPUT

***# SPECIFY NUMBER OF BITS**

e.g.
DEU's
PARALLEL TO SERIAL
CONVERTERS

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Analog Functions

Analog functions include potentiometers and other transducers for control or measurement, and D'Arsonval meter movement and DC and AC servomechanisms for display and positioning.

The RHC, THC, and SBTC will input their position to the computer through an analog-to-digital device in the SCE called an AI.

Meter movement instruments will be driven directly from computer programs through digital-to-analog converters (AO's). Examples shown are the round and vertical meters.

Other cockpit indicators are driven by one or a combination of the following drive systems:

- (a) DC Servo Type 1
- (b) DC Servo Type 2
- (c) DC Servo Dual Speed
- (d) DC Synchro
- (e) AC Synchro (ESRD)

A DC Servo movement is one which contains an operational amplifier with sufficient high gain that sums a drive signal and a follow-up signal. This amplifier then positions a motor as a function of the error signal produced. The pointer is geared to the motor and to the precision follow-up potentiometer.

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When the requirement is for a multiple-turn device, there is need for greater accuracy plus the ability to keep track of the number of turns made. This is accomplished by having both coarse and fine signals. The coarse signal is a single AO channel. The fine signals consist of two phase related waveforms. In the instruments for OAS and SMS these are true sine and cosine.

A DC Synchro movement is one in which the indicator pointer is positioned by the DC produced field between two coils. One field is produced from a signal containing the sine of the desired pointer angle and the second field is produced from a signal containing the cosine of the desired pointer angle. The pointer itself is mounted on a rotor.

An AC Synchro movement is simply a classical synchro receiver, connected to an indicator pointer. Its position is determined by the phase relation and voltage on each of three coils. The rotor is positioned in the field of these coils. This type, so as to be driven by the DC outputs from the SCE, require ESRD's which convert two phase-related DC signals into the three required voltages.

DATE

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DATA
CONVERSION
EQUIPMENT

AI

ANALOG
INPUTANALOG INPUT
POTENTIOMETER CONTROL

POTENTIOMETER

+V REF.

-V REF.

e.g.
SBTC
RUDDER PEDALS
WHEEL BRAKES

DATE

REV.

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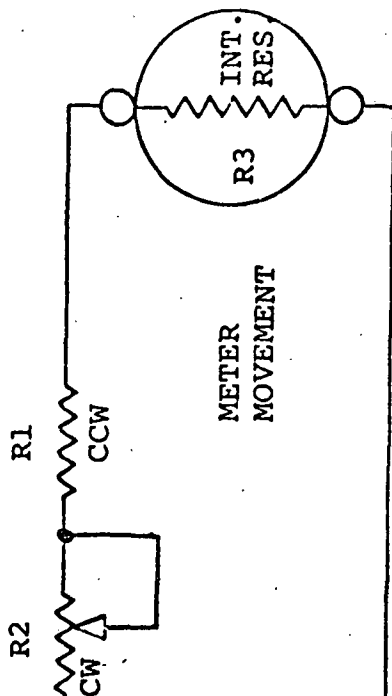
REP. NO.

PANEL

DATA
CONVERSION
EQUIPMENT

ANALOG
OUTPUT

AO



e.g. ROUND METERS:
AC VOLTS
DC VOLTS
DC AMPS

ANALOG OUTPUT
D'ARSONVAL METER INSTRUMENT

DATE

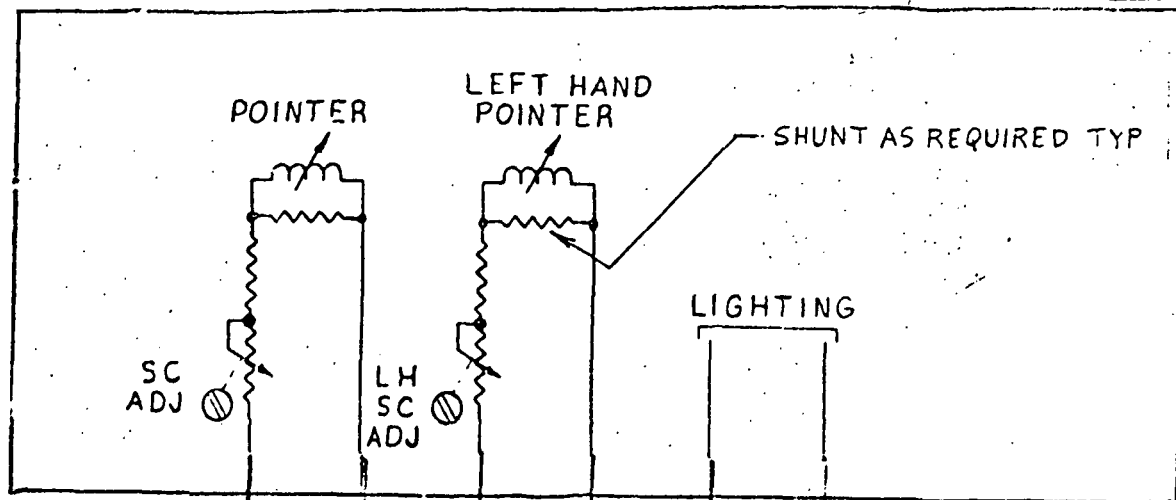
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INDICATOR

e.g. VERTICAL METERS

ANALOG OUTPUTS
METER DRIVE

DATA
CONVERSION
EQUIPMENT

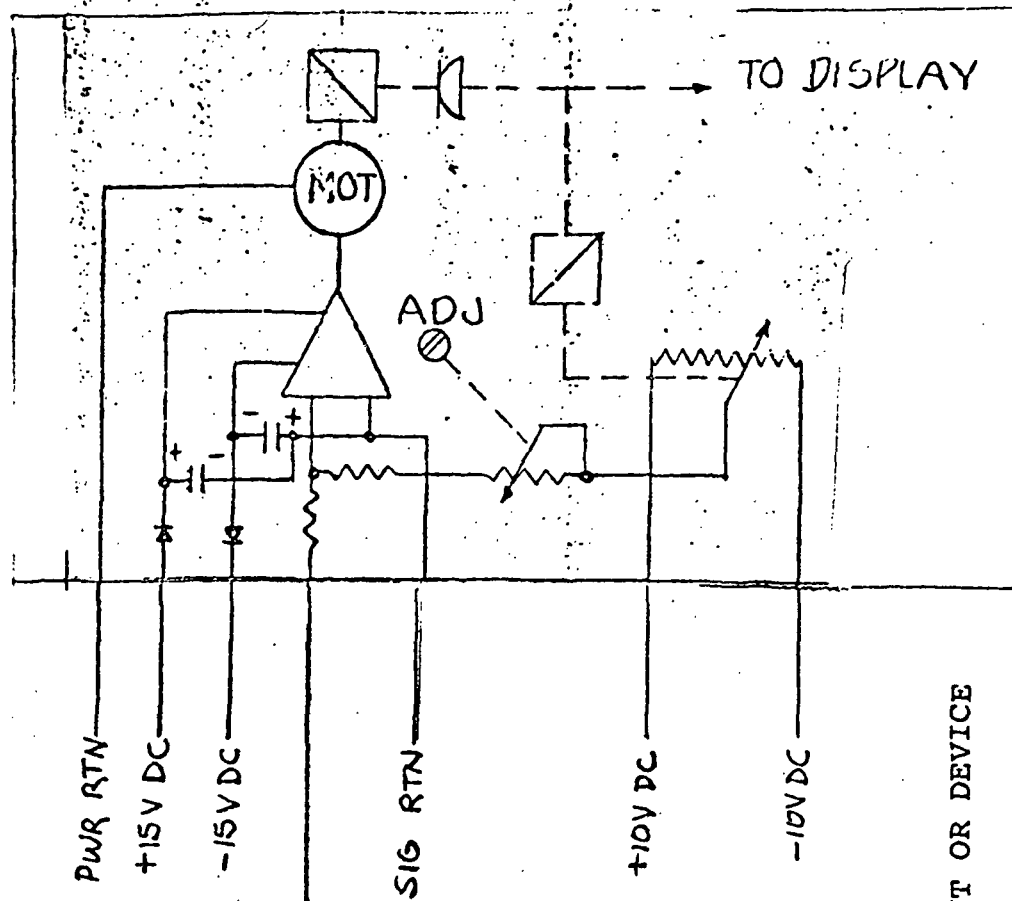
AO

AO

ANALOG
OUTPUTS

DATA
CONVERSION
EQUIPMENTANALOG
OUTPUT

AO

ANALOG OUTPUT
D. C. SERVO INSTRUMENT OR DEVICE
TYPE 1

INDICATOR

e.g.

TAPE METERS
SPI

DATE

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DATE

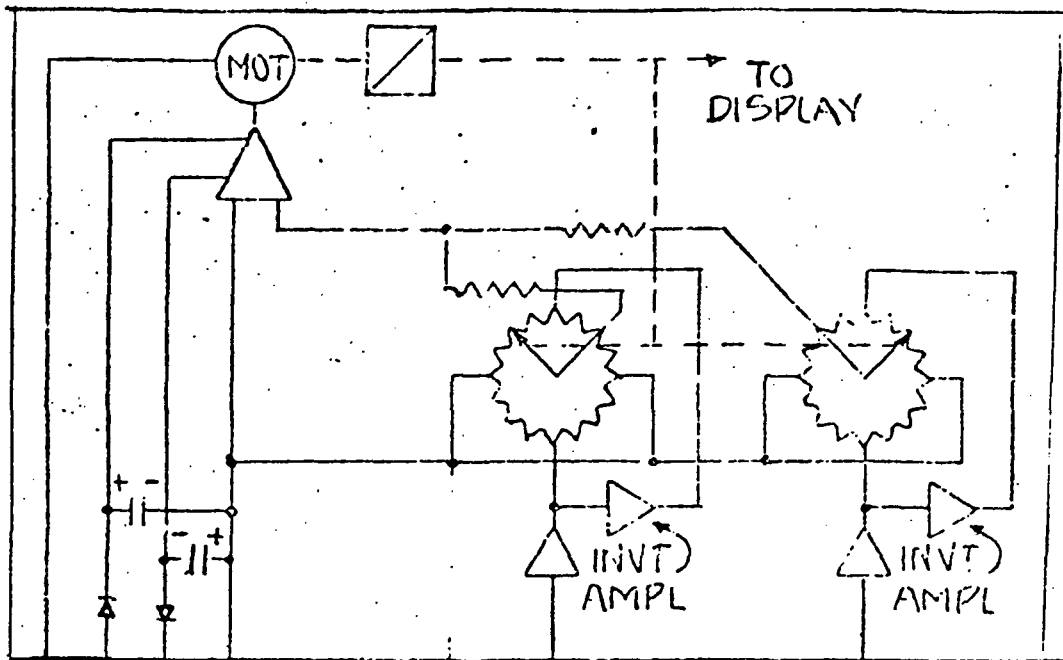
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INDICATOR

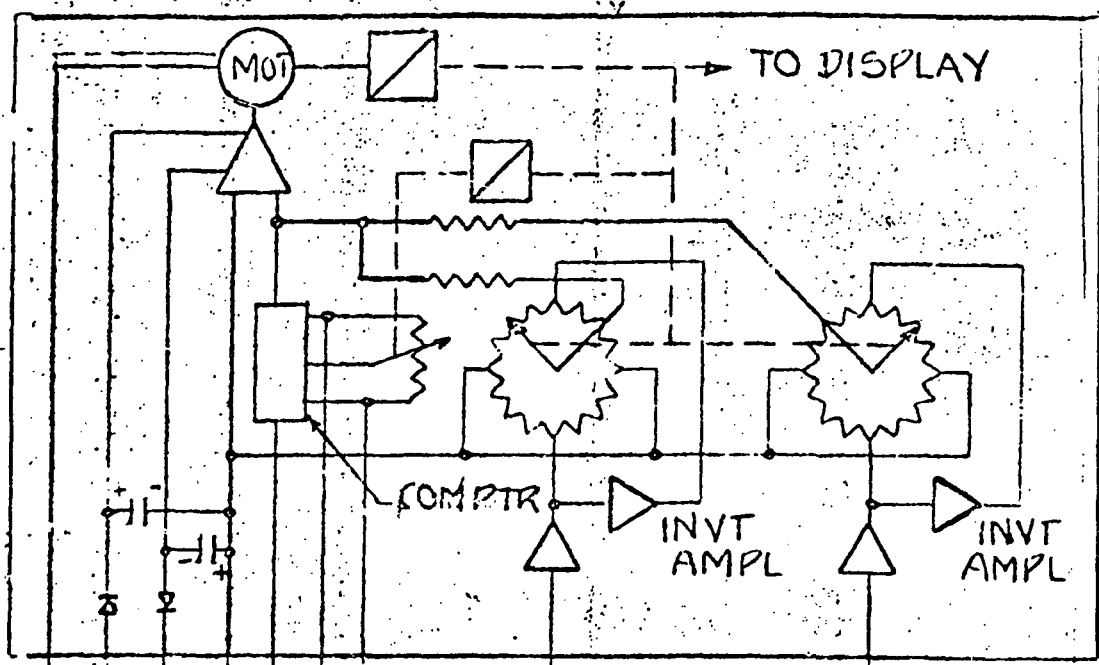
e.g.

HSI

ANALOG OUTPUTS
D.C. SERVO INDICATOR
TYPE 2

DATA
CONVERSION
EQUIPMENT

ANALOG
OUTPUTS



INDICATOR

e.g.
AMI
AVVT

PWR RTN
+15VDC
-15VDC
SIG RTN
+10VDC
-10VDC

ANALOG OUTPUTS
D.C. SERVO INDICATOR
DUAL SPEED

DATA
CONVERSION
EQUIPMENT

AO

AO

AO

ANALOG
OUTPUTS

DATE

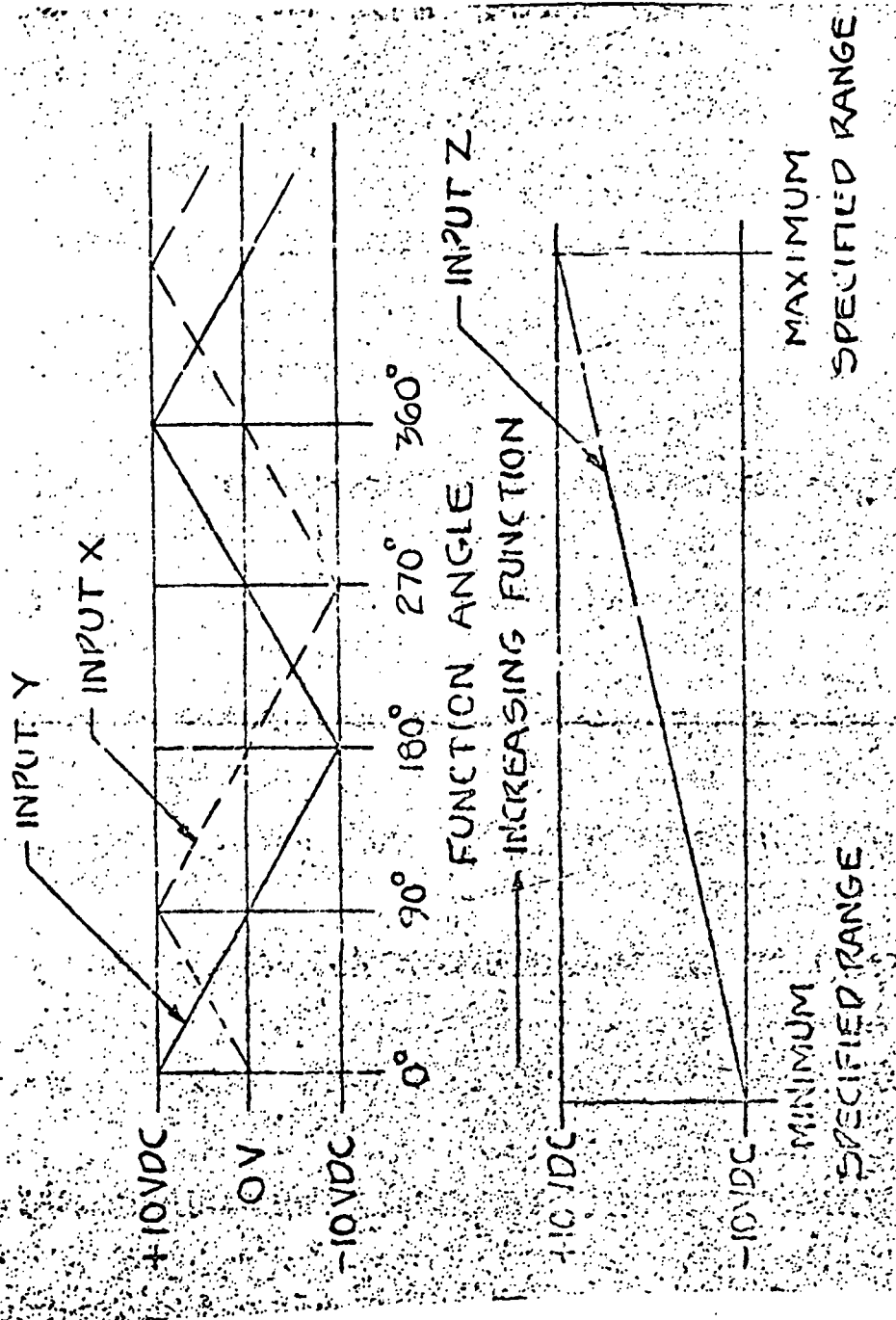
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COARSE (Z) AND -01 FINE (X,Y) SIGNAL INPUTS
-02 HAS TRUE SINE & COSINE FOR THE FINE
SIGNAL INPUTS

DATE _____

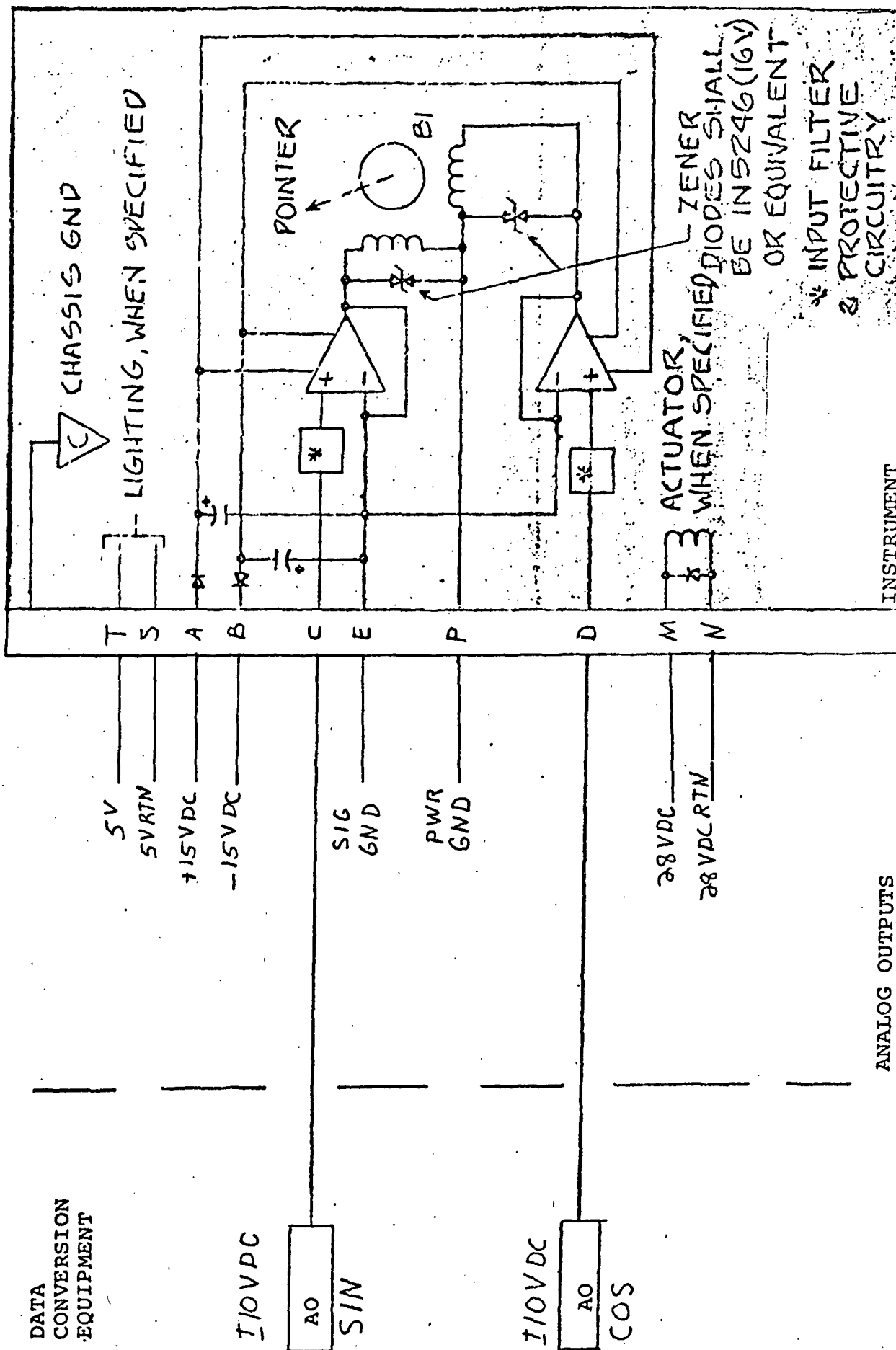
REV.

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REP. NO.



ANALOG OUTPUTS

D. C. SYNCHRO-REPEATER INDICATOR

e.g. ACCELEROMETER

DATE

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PAGE NO.

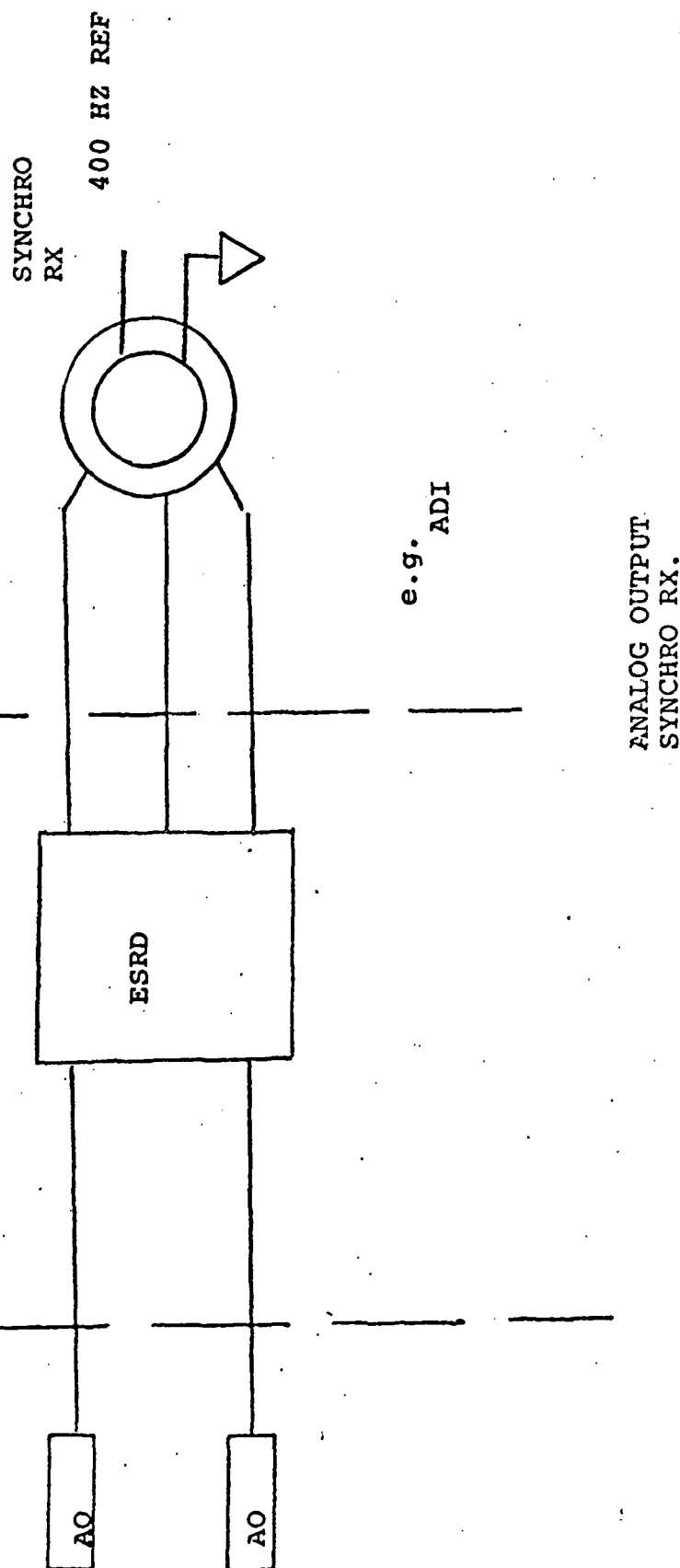
REV.

BINGHAMTON, NEW YORK

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DATA
CONVERSION
EQUIPMENT

ANALOG
OUTPUTS



SMS PROGRAM DIRECTIVE

1. INITIATOR B. M. GIFFORD	ORGANIZATION NASA	DATE 4/20/76	NO. N20-001P
TITLE SECOND FBCS ENTRANCE LADDER			
2. DESCRIPTION OF PROBLEM: PRESENT DESIGN INCLUDES TWO HATCHES WITH ONE LADDER SAFETY HAZARD FOR EMERGENCY EGRESS.			
3. RECOMMENDATION: ADD SECOND LADDER TO FIXED BASE HATCHES.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: SECONDARY ENTRANCE/EXIT WILL BE THRU HATCH TWELVE FEET ABOVE FLOOR.			
5. CONCURRENCE			
WBS MANAGER <i>B. M. Gifford</i> For C. Mine		TEAM LEADER <i>B. M. Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>L. Clark</i>		DATE 4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT: COST IMPACT UNDER \$2,000 - NO SCHEDULE IMPACT. <i>LeBauer</i> 4/21/76			
8. SCP ACTION:			
57			
APPROVAL			
SCP CHAIRMAN <i>McCafferty</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE

1. INITIATOR CLIFF MIRE	ORGANIZATION FE26	DATE 4/20/76	NO. N20-002P
TITLE SMS CREW STATION CEI SPEC CHANGES			
2. DESCRIPTION OF PROBLEM: THE SMS CEI SPEC DRD NO. SE-227T DOES NOT DIFFERENTIATE THE EFFECTIVITIES OF MBCS, FBCS, FBCS MOD KIT.			
3. RECOMMENDATION: CHANGE PAGE 4 PARAGRAPH 3.1.1.1.1 TO INDICATE EFFECTIVITIES COVERED BY THE CEI. CHANGE PAGE 11 TO SHOW FBCS MOD KIT GFE REQUIREMENTS. CHANGE APPENDIX TO SHOW C&D PANEL EFFECTIVITIES PLUS ADD AN ENTRY TO BE UPDATED LATER FOR THE FBCS MOD KIT. ALSO FOR ITEM #17 CHANGE F5 TO F6. CHANGE PAGE 11, PARAGRAPH 3.2.2.1 ITEM 5 FROM (1) TO (2).			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: CEI WOULD BE INCORRECT.			
5. CONCURRENCE			
WBS MANAGER <i>Bin Giffard For C.Mire</i>		TEAM LEADER <i>BM Giffard</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>Charles Olmby</i>		DATE 4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT: NO COST OR SCHEDULE IMPACT.			
<i>LaBianca 4/21/76</i>			
8. SCP ACTION:			
57			
APPROVAL			
SCP CHAIRMAN <i>McAfferty</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE

FB & MB

1. INITIATOR	ORGANIZATION	DATE	NO.
T. GEREK	SPD	4/15/76	S20-001P
TITLE SECTION CHIEF			
2. DESCRIPTION OF PROBLEM: THE TYPE OF EVENT INDICATORS (FLAGS) FOR THE SMS HAVE CHANGED FROM ALL 2 STATE TO MOSTLY 3 STATE TYPES RESULTING IN AN INCREASED SCE REQUIREMENTS. ALSO, THE MBCS CANNOT USE ALL OF THE EXISTING OAS EVENT INDICATORS AS PROPOSED.			
3. RECOMMENDATION: INCORPORATE THE 3 POSITION EVENT INDICATOR.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: THE SMS AND 102 VEHICLE WILL NOT BE THE SAME CONFIGURATION.			
5. CONCURRENCE			
WBS MANAGER <i>Cliff Mire</i> 4/20/76		TEAM LEADER <i>B. M. Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>L. Blum</i>		DATE 4/20/76	
7. CONTRACTOR'S IMPACT STATEMENT: COST FOR EVENT INDICATORS FOR MBCS AND ADDITIONAL SCE WILL BE INCREASED. THE FBCS WILL ALSO HAVE SIMILAR COST INCREASE. <i>T. Gerek</i> 4/16 <i>J. Rosen</i> 4-19-76 <i>LeBauer</i> 4/21			
8. SCP ACTION: <i>5R</i>			
APPROVAL			
SCP CHAIRMAN <i>McCafferty</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE

FB & MB

1. INITIATOR T. GEREK	ORGANIZATION SPD	DATE 4/15/76	NO. S20- 002P
TITLE SECTION CHIEF			
2. DESCRIPTION OF PROBLEM: REVISION C to VL70-730102 HAVE CHANGED THE FORWARD PANELS FROM DATA SUPPLIED FOR PDR DOCUMENTATION. CAUSING ADDITIONAL REVISION			
3. RECOMMENDATION: INCORPORATE THE CHANGES INTO THE FORWARD PANEL AT PDR.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: THE SMS WILL NOT BE IN CONFIGURATION WITH VEHICLE 102.			
5. CONCURRENCE			
WBS MANAGER <i>Chaffin</i>		TEAM LEADER <i>BM Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>L. Albery</i>		DATE 4/20/76	
7. CONTRACTOR'S IMPACT STATEMENT: COST INCREASE AND INTERMEDIATE SCHEDULE CHANGES FOR BOTH THE FBBS AND MBBS. <i>T. Gerek 4/14/76 R. Nixon 4/19 LeBrown 4/21/76</i>			
8. SCP ACTION:			
5R			
APPROVAL			
SCP CHAIRMAN <i>McCauley</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE			FB & MB
1. INITIATOR T. GEREK	ORGANIZATION SPD	DATE 4/15/76	NO. S20-003P
TITLE SECTION CHIEF			
2. DESCRIPTION OF PROBLEM: LAYOUT DATA RECEIVED FROM ROCKWELL HAVE INDICATED THAT THE EYEBROW, L&R CONSOLE AND CIRCUIT BREAKER STRUCTURE ARE CHANGING TO ACCEPT THE 102 PANELS. SPD PROPOSED COST FOR THE SMS ASSUMED THAT THESE STRUCTURE WOULD BE SAME AS OAS.			
3. RECOMMENDATION: INCORPORATE THE CHANGES SO PANELS AND STRUCTURES WILL BE THE SAME CONFIGURATION AS THE 102 VEHICLE.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: SMS PANELS WILL NOT MATE WITH EXISTING OAS DESIGNED STRUCTURE.			
5. CONCURRENCE			
WBS MANAGER <i>Chip Miller 4/24/76</i>		TEAM LEADER <i>B. M. Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>C. W. Bailey</i>		DATE 4/20/76	
7. CONTRACTOR'S IMPACT STATEMENT: COST INCREASE AND INTERMEDIATE SCHEDULE CHANGES FOR BOTH THE FBBS AND MBCS. <i>T. Gerek KSH 4/16 D. Hines 4-19-76 (C. Brown) 4/21/76</i>			
8. SCP ACTION:			
<div style="text-align: center; font-size: 1.5em; font-weight: bold;">SR</div>			
APPROVAL		DATE	
SCP CHAIRMAN <i>McCallister</i>		4/22/76	

SMS PROGRAM DIRECTIVE		FB ONLY	
1. INITIATOR T. GEREK	ORGANIZATION SPD	DATE 4/15/76	NO. S20-004P
TITLE SECTION CHIEF			
2. DESCRIPTION OF PROBLEM: REVISION C TO V070-730102 HAVE MADE MANY CHANGES TO THE AFT CREW STATION PANELS FROM THE DATA SUPPLIED PRIOR TO PDR DOCUMENTATION			
3. RECOMMENDATION: INCORPORATE THESE CHANGES AND HOLD SEPARATE PDR FOR THE AFT CREW STATION PANELS.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: THE FBSCS WILL NOT BE OF THE CONFIGURATION PRESENTLY DESIGNED FOR THE 102 VEHICLE.			
5. CONCURRENCE			
WBS MANAGER <i>Chippindale</i> ^{4/16/76}		TEAM LEADER <i>BM Gifford</i>	
6. DISPOSITION			
<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input checked="" type="checkbox"/> Tech. Direction <input type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS: <i>Hold for aft 4/5 PDR</i>			
APPROVAL			
TECHNICAL MANAGER <i>L. Cluckey</i>		DATE 4/20/76	
7. CONTRACTOR'S IMPACT STATEMENT:			
COST INCREASE AND INTERMEDIATE SCHEDULE CHANGES. ^(M)			
<i>T. Gerek KSP 4/16 J. Hester 4/19/76 L. Brown 4/22/76</i>			
8. SCP ACTION:			
<div style="text-align: center; font-size: 1.5em; margin-bottom: 10px;">57</div> <div style="display: flex; justify-content: space-between;"> <div> APPROVAL SCP CHAIRMAN <i>McCauley</i> </div> <div> DATE 4/22/76 </div> </div>			

SMS PROGRAM DIRECTIVE

1. INITIATOR T. GEREK	ORGANIZATION	DATE	NO. S20-005P
TITLE HSI CONFIGURATION			
2. DESCRIPTION OF PROBLEM: THE HSI DESIGN FOR THE SMS WILL BE THE SAME AS THAT FOR THE OAS AND WILL NOT INCLUDE THE EFFECTS OF RID S7-129 WHICH HAS NOT BEEN DISPOSITIONED FOR OAS.			
3. RECOMMENDATION: IF NASA APPROVES OAS RID S7-129 FOR SIMCOM IMPLEMENTATION, THEN THIS RID SHOULD ALSO BE APPLIED TO SMS.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: LOSS OF CONFIGURATION CONTROL BETWEEN OAS AND SMS.			
5. CONCURRENCE			
WBS MANAGER <i>B. S. Gifford For C. Mine</i>		TEAM LEADER <i>B. M. Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>L. Blum</i>		DATE 4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT: IF OAS APPROVES RID, NO SMS COST IMPACT. IF OAS DISAPPROVES RID, SMS WOULD EXPERIENCE COST IMPACT FOR HSI REVISION FOR BOTH OAS & SMS. POTENTIAL SCHEDULE PROBLEM IS UPDATING OAS TO MBCS. (3 MONTH INDICATOR TURN AROUND). <i>LeBlond 4/22/76</i>			
8. SCP ACTION:			
CAT 7 (5/26/76)			
APPROVAL			
SCP CHAIRMAN <i>McClafferty</i>		DATE 4/22/76	

SMS PROGRAM DIRECTIVE

1. INITIATOR T. GEREK	ORGANIZATION	DATE	NO. S20-006P
TITLE INSTRUMENT CONFIGURATION-SHATTER SHIELDS			
2. DESCRIPTION OF PROBLEM: INSTRUMENT DESIGN FOR THE SMS WILL BE THE SAME AS THE CURRENT OAS DESIGN AND WILL NOT INCLUDE SHATTER SHIELD. ADDITION OF SHATTER SHIELDS TO THE OAS INSTRUMENTATION WAS THE SUBJECT OF RID S7-103 WHICH WAS DISAPPROVED CAT'D. 16			
3. RECOMMENDATION: IF NASA APPROVES RID S7-103 FOR SIMCOM IMPLEMENTATION, THEN THIS RID SHOULD ALSO BE APPLIED TO SMS.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: LOSS OF CONFIGURATION CONTROL BETWEEN OAS AND SMS.			
5. CONCURRENCE			
WBS MANAGER <i>B. G. Ford</i>		TEAM LEADER <i>B. G. Ford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>L. Blumky</i>			DATE 4/22/76
7. CONTRACTOR'S IMPACT STATEMENT: OAS RID CATEGORIZED 16 (SUBCONTRACTOR AFTER RFT) FOR SMS TO WAIT FOR SEPTEMBER 24 FOR SHATTER SHIELD ORDERING WOULD PRESENT A SCHEDULE CONSTRAINT. TO PROCEED WITH DESIGN FOR SMS (REQ'D TO ORDER 6/1/76) WOULD PRESENT A COST IMPACT. <i>Review 4/21/76</i>			
8. SCP ACTION:			
CAT 16			
APPROVAL			
SCP CHAIRMAN <i>McCafferty</i>			DATE 4/22/76

[illegible]

[illegible]

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[illegible]

[illegible]

DATE	REVISION	REMARKS
5/1/77	1	6070-731070 due 1/2/77
5/1/77	2	6070-730252 11 4/15/77
		(GLAreshid assumed)
		To be same as OAS)

REMARKS

DATE

OPTION # 020-

VL10-XXXXXX

VL10-XXXXXX

DATE

ESAI BLANK
11 ASSY

6/24/16 6/24/16
V070-73 V070-730253
dura 371127
dura 16.7 AWG

[illegible]

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DATA / DRAWING TO BE USED

AREA

VL70-XXXXXX

VL70-XXXXXX

FB AB BLANK

10 ASS'Y

ASSUMPTION # A20-
OPTION # 030-

DECISION
DATE

REMARKS

VL70-731210

FB AB BLANK

10 ASS'Y

✓

6/25/76

due 6/11/76

VL70-730267 due 10/15/76

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

REMARKS

DATE

OPTION # H20-
020-

VL10-XXXXXX

VL10-XXXXXX

AREA

Center Circle

VL70-333290

VL70-333291

DATA / DRAWING TO BE USED

AREA

V070-XXXXXX

VL70-XXXXXX

ASSUMPTION # A20-
OPTION # P20-

DECISION
DATE

REMARKS

DC AIR Conditioning

OUT LETS

VL 70-333160

VL 70-333161

6/4/76

6/4/76

DATA / DRAWING TO BE USED

AREA

V070-XXXXXX

VL70-XXXXXX

ASSUMPTION # A20-
OPTION # 020-

DECISION
DATE

REMARKS

CLARESHIELD

HC SUPPORT

✓

✓

ASSUME SAME AS
OAS - 0V101 -

ASSUME SAME AS
OAS - 0V101 -

[illegible]

REMARKS

OPTION # 020-

VLVU-XXXXXX

VLVU-XXXXXX

FILE #

DATE

SPEC CONTROL
DRAWING
EVENTS

MC 432-0222

5/1/76 Released NOT in house

METER, TAPE

MC 432-0232

5/1/76 Released NOT in house

X-Pointer

MC 432-0233

Use GFE Supplied LEM
Indicator

Round Meter

MC 432-0237

5/1/76 NOT Released Due Rel 9/23/76

Meter Visual

MC 432-0238

5/1/76 NOT Released Due Rel 9/23/76

LIGHT ASSY

MC 434-0068

SAME AS 101

C/W ANNUN.

MC 434-0069

5/24/76

ANNUN. DISPLAY

MC 434-0070

5/24/76

FIRE WARNING
ANNUN.

MC 434-0073

5/24/76

SINGLE EVENT
ANNUN

MC 434-0075

5/24/76

OVER HEAD
FLOOD LIGHTS

MC 434-0078

5/1/76 SPEC Release NOT in house

COMPUTER
STATUS

MC 434-0080

5/26/76

REMARKS

DECISION
DATE

ASSUMPTION # H20-
OPTION : # P20-

VL10-NKXAXX

WV10-NKXAXX

HFEH

SPC CONTROL

DRAWING

Thumbwheel SW

MC 452-0134

Pushbutton SW

ME 452-0060

SWITCH
PUSH BUTTON

ME 452-0061

Toggle
SWITCH

ME 452-0102

5/1/76 SPEC Release NOT IN house

5/24/76

5/24/76

5/1/76 SPEC Release NOT IN house

SMS PROGRAM DIRECTIVE

1. INITIATOR	ORGANIZATION	DATE	NO.
CLIFF MIRE	JSC	4/20/76	N20-003P
TITLE PANEL #019 DEFINITION			
2. DESCRIPTION OF PROBLEM: THERE IS INDICATION THAT THE PANEL #019 POWER CONTROL AND CONNECTORS ARE REMOVED.			
3. RECOMMENDATION: HOLD OFF ON PANEL #019 UNTIL THE DELETION OR RELOCATION CAN BE CONFIRMED AND IDENTIFIED BEFORE 6/26/76.			
4. IMPACT, IF RECOMMENDATION NOT IMPLEMENTED: SINGER WOULD PROBABLY EXPEND USELESS EFFORT.			
5. CONCURRENCE			
WBS MANAGER <i>Bm Gifford For C-Mire</i>		TEAM LEADER <i>Bm Gifford</i>	
6. DISPOSITION			
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input checked="" type="checkbox"/> Withdrawn <input type="checkbox"/> Tech. Direction <input checked="" type="checkbox"/> Contractor's Impact Statement Req.			
COMMENTS:			
APPROVAL			
TECHNICAL MANAGER <i>L. Blakely</i>		DATE 4/22/76	
7. CONTRACTOR'S IMPACT STATEMENT: NO COST OR SCHEDULE IMPACT. <i>W. Brown</i> 4/21/76			
8. SCP ACTION:			
CAT 1			
APPROVAL		DATE	
SCP CHAIRMAN <i>Mc Cafferty</i>		4/22/76	